CANADIAN THESES ON MICROFICHE

I.S.B.N.

THESES CANADIENNES SUR MICROFICHE

National Library of Canada
Collections Development Branch

Canadian Theses on
Microfiche Service

Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Direction du développement des collections

Service des thèses canadiennes
sur microfiche

NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us a poor photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this film is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30. Please read the authorization forms which accompany this thesis.

THIS DISSERTATION
HAS BEEN MICROFILMED
EXACTLY AS RECEIVED

AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de mauvaise qualité.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de ce microfilm est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30. Veuillez prendre connaissance des formules d'autorisation qui accompagnent cette thèse.

LA THÈSE A ÉTÉ
MICROFILMÉE TELLE QUE
NOUS L'AVONS REÇUE

NL-339 (r. 82/08)

Canada

0-315-09041-3

National Library of Canada
Canadian Theses Division
Ottawa, Canada
K1A 0N4

Bibliothèque nationale du Canada
Division des thèses canadiennes

158

56958

PERMISSION TO MICROFILM — AUTORISATION DE MICROFILMER

- Please print or type — Écrire en lettres moulées ou dactylographier

Full Name of Author — Nom complet de l'auteur
William Vincent Roth

Date of Birth — Date de naissance 28 March 1950	Country of Birth — Lieu de naissance CANADA

Permanent Address — Résidence fixe
6418 - 106 st. Edmonton Alberta

Title of Thesis — Titre de la thèse
NEIGHBORHOOD TYPES AND LEISURE BEHAVIOR IN EDMONTON

University — Université
University of Alberta

Degree for which thesis was presented — Grade pour lequel cette thèse fut présentée
MASTER OF ARTS

Year this degree conferred — Année d'obtention de ce grade 1982	Name of Supervisor — Nom du directeur de thèse DR. LESLIE BELLA

Permission is hereby granted to the NATIONAL LIBRARY OF CANADA to microfilm this thesis and to lend or sell copies of the film.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

L'autorisation est, par la présente, accordée à la BIBLIOTHÈQUE NATIONALE DU CANADA de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans l'autorisation écrite de l'auteur.

Date April 23/82	Signature

NL-91 (4/77)

THE UNIVERSITY OF ALBERTA

NEIGHBORHOOD TYPES AND LEISURE BEHAVIOR IN EDMONTON

by

© William V. Roth

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF ARTS
IN
RECREATION

Physical Education

EDMONTON, ALBERTA
SPRING 1982

microfilming

THE UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR William V. Roth

TITLE OF THESIS NEIGHBORHOOD TYPES AND LEISURE BEHAVIOR IN EDMONTON

DEGREE FOR WHICH THESIS WAS PRESENTED MASTER OF ARTS

YEAR THIS DEGREE GRANTED SPRING 1982

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

(SIGNED) ....

PERMANENT ADDRESS:

6418 - 106st

EDMONTON, ALBERTA

T6H - 2V4

DATED April 23 1982

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled NEIGHBORHOOD TYPES AND LEISURE BEHAVIOR IN EDMONTON submitted by William V. Roth in partial fulfilment of the requirements for the degree of MASTER OF ARTS in RECREATION.

Supervisor

Date April 23, 1982

ACKNOWLEDGEMENTS

I would like to express my appreciation for the cooperation provided by the City of Edmonton's Parks and Recreation Department. They provided the data used in this study and also made available reports on the results from their 1980 Leisure Survey.

I would also like to thank the members of my committee, Dr. Len Wankel, Dr. Ann Hall and Dr. Sami Mohsen. This thanks is extended not only for the time they spent to sit on the committee, but also for the insightful comments and advice which helped me to complete the study.

I will also take this opportunity to thank my wife Pat, without whose patience, understanding and support I could not have seen either this study nor my degree through to completion.

Finally, I would like to acknowledge my supervisor Dr. Leslie Bella. She came to my assistance when no one else was available and became the driving force behind this study, keeping me on track when it looked like I might never finish.

To these and all the others whose names I did not mention but who had a hand in the completion of this study I offer my sincere and heartfelt thanks and appreciaton for your assistance.

ABSTRACT

The City of Edmonton's Parks and Recreation Department proposed, in its *1979-83 Master Plan*, that leisure behavior could be determined by the type of area or neighborhood of residence. Existing neighborhoods had been clustered into six groups based on various socio-demographic variables.

The purpose of this study was to test the hypothesis that leisure behavior would vary by neighborhood type. Measures of leisure behavior in each of three leisure categories, Outdoor Recreation, Sports/Athletics and Arts and Cultural, were compared among the six neighborhood types.

The data for the analysis were obtained from the *1980 Leisure Study* that had been conducted by the Parks and Recreation Department in November of 1980. This survey contacted over 2,000 households and produced 2254 useable, returned questionnaires. The purpose of the survey had been to collect data on a wide range of leisure topics.

Multiple paired comparison techniques were used to test the differences among the neighborhood types for each of the measures of leisure behavior. An analysis of the results of these tests revealed that for the most part no significant differences existed among the neighborhood types, at least in terms of leisure behavior. Only two consistencies could be found. First, there were differences between neighborhood type 2, an older, residential area, and neighborhood type 5, a middle-aged, professional area. Second, similar

differences existed between type 2 and neighborhood type 6. The latter were classified as new areas, and consisted of all neighborhoods for which no data had been available during the original clustering. In both cases the neighborhood types were different on six of the possible eighteen different measures of leisure behavior. Overall only 29 of the total 270 possible between neighborhood type leisure behavior comparisons were significant.

It was concluded that the neighborhood typology developed by the City of Edmonton's Parks and Recreation Department would be of little value in predicting leisure behavior.

Although the use of the neighborhood typology, as it now stands, is not recommended, the total rejection of this approach to the problem of predicting leisure behavior was not. It was instead recommended that the analysis that produced the neighborhood types be repeated using more recent data in the hope that this would enhance its usefulness.

List of Tables

Table Page

1 Ratio: Respondents to Sample Size 30

2 Neighborhood Type 1: Older Highrise 45

3 Neighborhood Type 2: Older Residential 47

4 Neighborhood Type 3: Middle-aged 49

5 Neighborhood Type 4: Younger 50

6 Neighborhood Type 5: Professional 52

7 Neighborhood Type 6: New 54

8 Participation Rate and Number of Activities 55

9 Frequency: Outdoor Recreation 56

10 Frequency: Sports/Athletics 57

11 Frequency: Arts and Cultural 58

12 Outdoor Recreation: Participation Rates 59

13 Outdoor Recreation: Number of Activities 62

14 Outdoor Recreation: Frequency of Participation 64

15 Sports/Athletics: Rate of Participation 67

16 Sports/Athletics: Number of Activities 69

17 Sports/Athletics: Frequency of Participation 71

18 Arts and Cultural: Participation Rates 74

19 Arts and Cultural: Number of Activities 75

List of Figures

Figure Page

1 ACTIVITIES BY NEIGHBORHOOD TYPE:1977 25

2 NEIGHBORHOOD TYPE ONE 36

3 NEIGHBORHOOD TYPE TWO 37

4 NEIGHBORHOOD TYPE THREE 38

5 NEIGHBORHOOD TYPE FOUR 39

6 NEIGHBORHOOD TYPE FIVE 40

Table of Contents

Chapter Page

I. THE PROBLEM AND ITS SETTING 1

A. INTRODUCTION 1

B. LEISURE AND RECREATION: DEFINITIONS 2

C. THE CORRELATES OF LEISURE INVOLVEMENT 5

Socio-Demographic Variables 6

Composite Variables 16

Other Correlates of Leisure Involvement 17

Social Area Analysis 19

Neighborhood Types in The City of Edmonton .22

D. STATEMENT OF THE PROBLEM 24

Problem 24

Hypothesis 24

Definition of Terms 26

Delimitations 26

Assumptions 27

Justification of The Study 27

II. METHODOLOGY 28

A. DATA 28

Source 28

Response Rate 29

Representativeness 31

B. DEPENDENT VARIABLES 31

Participation Rate 33

Number of Different Activities Engaged In ..33

Frequency of Participation 33

C. INDEPENDENT VARIABLES 34

D. ANALYSIS 35

Participation Rate 35

Number of Different Activities Engaged In ..41

Frequency of Participation 42

Summary 43

III. RESULTS 44

A. LEISURE BEHAVIOR IN NEIGHBOURHOOD TYPES 44

Neighbourhood Type One: Older Highrise 44

Neighbourhood Type Two: Older Residential ..46

Neighbourhood Type Three: Middle-aged 46

Neighborhood Type Four: Younger 48

Neighborhood Type Five: Professional 48

Neighborhood Type Six: New 51

B. THE COMPARISONS AMONG NEIGHBOURHOOD TYPES 53

Outdoor Recreation 59

Sports/Athletics 66

Arts and Cultural 73

Summary of Results 77

C. DISCUSSION 80

IV. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 84

A. SUMMARY 84

B. CONCLUSIONS 86

C. RECOMMENDATIONS 89

BIBLIOGRAPHY 92

APPENDICES 101

APPENDIX A: 1980 LEISURE SURVEY QUESTIONNAIRE 102
APPENDIX B: REPRESENTATIVENESS OF THE SURVEY 114
APPENDIX C: DATA ANALYSIS 118

I. THE PROBLEM AND ITS SETTING

A. INTRODUCTION

Canada, like most of the western world, is moving into what is called the post-industrial era (Mankin, 1978). This era is, and will be to an even greater extent in the future, de-emphasizing the work ethic of the industrial revolution and replacing it with the leisure ethic. People will no longer be identified primarily by their work, but instead will seek to fulfill themselves through non-work activities. While much of this increased demand for leisure opportunities will be met through the efforts of the individual, greater demands will also be placed on the services and programs of the leisure or recreation agency. The recreation professional therefore must be able to predict the direction and content of this demand for increased services. This will require an understanding of the nature of leisure and recreation and of the factors affecting participation in leisure activities.

While theories of leisure and recreation will be briefly touched upon, the main emphasis of this thesis will be on the factors affecting participation in leisure activities. Socio-demographic variables have long been the object of study by researchers seeking to understand the determinants of leisure behavior. There are, however, limitations to the effectiveness of this type of study (Burch,1969; Field and O'Leary, 1973).

One of these limitations is the fact that socio-demographic variables create aggregate groupings, ie. people are grouped because of a shared characteristic like age, when in reality they may have no relationship to each other. Another limitation is that socio-demographic variables often account for only a limited amount of the variance in leisure/recreation behavior. This study will examine one attempt to go beyond the basic socio-demographic variables. This new variable is a composite one, combining the standard socio-demographic variables with a spatial component. This new variable has been called a neighborhood type and will be tested to determine whether or not it can predict leisure behavior. Prior to a review of the literature on the correlates of leisure/ recreation behavior, definitions of these terms, leisure and recreation will be established.

B. LEISURE AND RECREATION: DEFINITIONS

Several definitions of leisure are discussed in the literature. The ancient Greek culture was one of the first to identify leisure as a separate kind of life (Murphy, 1975). They conceived of leisure as a way of life in which the individual attempted to elevate the spiritual self through intellectual and artistic pursuits (McIntosh, 1966; Kraus, 1978). Work and physical activities did not fit into this life of leisure, thereby limiting it to a wealthy few. This "classical" theory of leisure, because of the limits it imposes, has fallen into disfavor among present day recreation professionals (Kraus, 1978). The idea that leisure and self actualization, personal well-being and pleasure are interrelated has been, however, an important contribution by the Greeks to modern concepts of leisure.

Leisure has also been defined in terms of time. With the rise of machine power, man was supplied with an abundance of goods that required less work time to produce. Leisure became recognized as a block of time free from the obligations of work, or free from the necessities of life, such as working, sleeping and eating (Jensen, 1977). In addition it has been argued that leisure was the use of this free time in some constructive manner including, personal improvement, social services and joyfull activity (De Grazia, 1962; Kelly, 1972; Murphy, 1975; Kraus, 1978). The argument that leisure was free time that was used led to the term recreation.

Individual writers defining recreation usually agree that it is something that occurs during leisure. Recreation can either be viewed as a "process of involvement", or as a "result or outcome" (Jensen, 1977). The latter view holds that recreation is an experience or emotional state.

> "Recreation is an emotional condition within an individual human being that flows from a feeling of well-being and satisfaction. It is characterized by feelings of mastery, achievement, exhilaration, success, personal worth, and pleasure. It reinforces a positive self-image. Recreation is a response to aesthetic experience, achievement of personal goals, or positive feedback from others. It is independent of activity, leisure or social acceptance." (Gray,

1972: 19)

The "process of involvement" definition of recreation generally describes recreation as activities or experiences that occur in leisure time. These activities also require voluntary involvement and provide some personal satisfaction to the participant (Jensen, 1977; Kraus, 1978).

Jensen (1977), has argued that either of these definitions can be logically viewed as correct. The measures of leisure behavior that are to be used here are based on activities, and it is therefore proposed that the process or activity definition will be used in this study. These activities, because they occur during leisure, might be called leisure activities. It is further proposed that a distinction between leisure and recreation is, therefore, not required when referring to these activities. Burton (1972), in preparation for his studies on recreation in Britain, argued that for the average person the differences between the terms leisure and recreation were minimal. He proposed that they could be used interchangeably, although he would use a single term, recreation. Throughout the rest of this study the term leisure will be used, and it will be used to describe those activities or experiences that are freely entered into, provide personal satisfaction, occur in free non-obligated time, and the outcomes, if any, of such activities are "...couched within a framework of constructive and socially accepted moral values..." (Kraus and Curtis, 1972).

Given this definition of leisure as a certain kind of activity, the professional must consider the factors that influence people when they make decisions as to their leisure behavior, ie. will they participate, in what will they participate, and how often will they participate?

C. THE CORRELATES OF LEISURE INVOLVEMENT

The leisure agency is generally concerned with only a portion of the leisure activities participated in by its clientele, ie. formal organized leisure programs. The need for an agency to have an understanding and awareness of the leisure preferences of its clientele has been identified as one of the keys to effective leisure services by Lowery and Curtis(1973). They have suggested several methods for determining these preferences, including analysis of participation records, questioning of local organizations, direct observations, and general surveys. All of these methods, except surveys, tend to give more weight to the opinion of the active participant of the moment, ignoring the opinions of the non-participant. The survey, if properly conducted, can also sample the non-participants to discover their preferences.

In fact for many years, surveys have been the primary instrument used to gather information about the leisure activites engaged in by different population groups. Many of the earlier studies were concerned primarily with listing the leisure activities participated in, due perhaps to limited data processing capabilities.[1] These inventories of the numbers participating in various leisure activities generally can only tell us what happened in the past to one population group.

A procedure of greater use to the professional is one that gathers information about leisure behavior correlates which in turn can be used to make comparisons between population groups. From these comparisons, predictions can be attempted regarding future leisure behavior. A researcher who can establish a strong correlation between leisure participation and education for example, may then attempt to predict the leisure participation habits of a group of people if their level of education is known.

Socio-Demographic Variables

One of the first studies to attempt a comparison of leisure activity among diverse population groups was conducted by Lundberg, Komorovsky and McInerney, in 1934. The authors divided their sample into seven occupational groups, laborer, white collar, professional/executive, housewife, unemployed, highschool student, and college student. They found that each occupational group spent a similar percentage of its available leisure time in each of the broad leisure categories created for the study. There were significant differences, however, in the actual leisure time available to each group so that the actual time spent on leisure varied. For example, in the category "motoring" a white collar male spent twenty minutes per day or 5% of his leisure time, whereas, a female laborer spent thirteen minutes per day and it claimed 4% of her leisure time. In one type of activity, sports, there were considerable differences among the occupation groups in both the absolute and per cent of time spent in participating. The differences ranged from 95 minutes (23%) for college males to 16 minutes (3%) for housewives. The researchers also noted a considerable qualitative difference in the activities engaged in by the different occupational groups.[2] They concluded that further studies should be conducted using variables such as income, education, age, occupation, cultural status and sex to further analyze leisure behavior.

---

[1] For example, see Ruth Toogood, "A Survey of Recreational Interests and Pursuits of College Women," *Research Quarterly*, Vol. 10, 1939.

In another study, Edgren (1937) analyzed the leisure behavior of highschool students. He found that males participated in a wider range of activities than females. His respondents were chosen from four different highschools that were thought to represent different socio-economic status groups, and would, therefore, provide a cross-section of highschool students. He discovered that there were differences in interests among the students from the different schools. He also found that the students in the lower status schools participated less than those from the higher status schools in the activities they had found to be of interest. Although this study found differences in leisure behavior between different socio-economic status groups, one must be careful in generalizing from these results. They were based on only one school from each status group. From these early studies it became obvious that people with or from different backgrounds had different leisure behavior patterns.

---

[2] For instance, "going to the theatre" could have meant attending a New York play or a Wild West movie. It was implied by the authors that attending a New York play was a higher quality leisure experience than was attending the movie.

White (1958), also examined the differences in leisure participation between social classes. He established four social classes based on the occupation of the family head, sources of family income and the kind of residential neighborhood lived in. He used paired groups for his analysis and found differences in the amount and use of leisure time among the four social classes. He found these differences to become more pronounced as the person aged (his sample included individuals ranging from six to over eighteen years of age).

Clark (1958), studied leisure behavior using a more specific variable, occupational prestige, and asked questions about specific leisure activities. For example, he differentiated between attending football games and attending baseball games. He found that participation in specific activities was related to occupational prestige level and for most activities this relationship was linear. Also of interest in this study was the fact that there were twelve specific activities linked to the highest level of occupational prestige, ten linked to the lowest level, but only five linked to the three remaining levels. More recently Burdge (1969), conducted a similar study using the same occupational prestige scale. While he found differences in the type of activities engaged in by the different occupational classes, he did not find that activities were loaded at either end of the occupational scale. Burdge used a far more diverse list of activities to measure leisure participation and this may have accounted for the differences between his results and those of Clark. He also found that persons in the highest occupational levels participated at a greater rate in all leisure activites.

These studies seemed to indicate that occupation was an important correlate of leisure involvement. A more recent study, however, discovered that occupation was not an independent determinant of leisure behavior (White, 1975). White found that the effects of occupation disappeared if education and income were held constant. Similiarly, Kenyon (1966), and Cheek and Burch (1976) did not find occupation to be a significant determinant of leisure if other variables were held constant. Apparantly occupation was highly related to other variables, ie. education and income.

Education has proven to be a consistent determinant of leisure behavior, whether this behavior consisted of sport (Curtis and Milton,1976; Hobart, 1974; Kenyon, 1966), physical activity (Curtis and Milton, 1976; Kenyon, 1966), outdoor recreation (White, 1975) or a combination of leisure activities (Cheek and Burch, 1976). These studies have all found that the higher the level of education the greater the extent of leisure participation, whether it be measured in terms of rate, diversity or intensity.

Curtis and Milton analyzed data from a nation-wide leisure survey conducted in Canada in 1972. Respondents were measured on their rate of participation, frequency of participation and their variety of participation. Measures were obtained for both sport activities and physical exercise activities. [3] They found that education was positively related to all three measures used, ie. the higher the education, the greater the rate of participation, the greater the percentage of high frequency participators, and the greater the variety of activities participated in. Education was found to be a consistent correlate even when the effects of other variables, such as age and income, were accounted for. Other demographic variables have also proven to be fairly consistent in their relationship to leisure behavior, although not to the same extent as education.

Income has been found to be positively related to the rate of participation in various types of leisure activities (Kenyon, 1966; White, 1975). Kenyon found that the higher the income the greater the frequency of both watching sports, and participating in sports and physical activities.

---

[3] Sport consisted of activities like hockey, tennis and golf, whereas, physical exercise consisted of activities like jogging, calisthenics and yoga.

White's findings indicated that both the frequency of and the variety of activities increased as income increased. When Cheek and Burch (1976) examined this variable, they found that while income had a positive relationship to overall leisure participation, for specific activities the highest income groups were not necessarily the most frequent participators. They concluded that income was more an enabler variable than a determinant and that after a certain level of income was reached other factors, such as education, became more important in determining both the level of participation and the nature of participation.

The third variable found to have a consistent relationship to leisure behavior was age. It was found to have a negative relationship to participation in active types of leisure (Kenyon, 1966; White 1975; Curtis and Milton, 1976; Hobart, 1974). Kenyon found, however, that age was not significantly related to sports spectatorship. It seems logical to conclude that with advancing years the individual will turn from activities that make demands on the physical self and engage in more sedentary activities. A recent study by Rogers (1977), casts some doubt on this logic. He did a cross-national study in four European countries on sports participation. He found that the majority of the aged that did not participate were what he termed "sport illiterate". They had never participated in sport even as a child. He also found that those who had participated in childhood were highly likely to continue participating well past middle-age. The same might be true for other types of leisure activities as several studies have found that participation in childhood was likely to lead to participation as an adult (Hall, 1976; Yoesting and Christensen, 1978; Snyder and Spreitzer, 1979). Age is perhaps not so much a determinant of leisure activity as it is an indication of personal skills learned in different times. Interest and participation in leisure activities, particularily sports and exercise, has increased significantly over the past decade. As younger generations grow older they will have learned leisure participation habits far different from those of their parents. It is likely that age will, therefore, not continue to be such a negative factor in overall leisure participation. It will probably be a factor, however, in determining the nature of that participation due to the physical limitations imposed by increasing age.

Several other demographic variables have been examined in relationship to leisure behavior but with considerably less consistency in the results. In sport type activities, researchers have consistently found that males participated more, with more intensity and in a greater variety than did females, (Lundberg *et al* 1934; Kenyon, 1966; Robinson, 1967; Hobart, 1974; Curtis and Milton, 1976). Kenyon also found that men were more likely than women to be sport spectators. Sex was not a factor, however, in determining participation in physical activities or exercise (Kenyon, 1966; Curtis and

Milton, 1976). Other studies have found differences in the nature of leisure participation between the sexes but have not found consistent differences in the intensity of participation (Lundberg *et al*, 1934; Edgren, 1936; White, 1958).

Marital status has also been analyzed for its relationship to leisure behavior. White (1975) found it to have no significance in determining participation in outdoor recreation activities. Hall (1976), however, found marriage to have a negative effect on female participation in sport. Evidence from other studies (Sillitoe, 1966; Curtis and Milton, 1976) has indicated a similar effect for males. This decrease in participation due to marriage was, however, only temporary. Curtis and Milton found that for those over thirty-five marriage was not a deterrent to participation in sports, whereas, for those between twenty and thirty-five it was. Hall believed that the child bearing responsibilities that followed marriage were the main reason for non-participation among women, and Curtis and Milton pointed to career aspirations along with family responsibilities as the reasons for non-participation among males. Marriage, it seems, was not a direct determinant of participation. Marriage was a reflection of changes in other factors, lifestyle, time available, and so on, which would affect leisure behavior. White (1975) also looked at family size and city size but found they were of little use in predicting leisure participation.

In summary, it has been found by many researchers that there is some correlation between leisure behavior and certain socio-demographic variables. A positive relationship with leisure paricipation exists for income, occupation and education, with the latter being the most consistent of the three. Age has been found to have a negative reationship to leisure participation. There is some evidence that being of a particular age only indicates that one has learned certain leisure behavior habits, and not that age itself is the deterrent. Further, changing responsibilities through career and family may have more important effects on participation than age itself. The results for other variables have proven to be unstable across studies. Sex differentiates levels of participation in sports, but males and females have been found to participate equally in physical exercise activities. In other forms of leisure activity, the type of activity engaged in varies between the sexes, but the intensity of participation has not been found to vary with the same consistency. Studies using marital status as a predicter variable also have mixed results, with marriage being a deterrent for certain age groups but not for others. For recreation planners this type of information can at least provide some indication of the leisure interests and needs of their clientele (at least if they are aware of the clientele's demographic profile).

There have been, however, some who have argued that the standard social variables fail to predict leisure behavior and are only useful for describing past behavior (Burch, 1969). Others have pointed to the small amounts of the variance in leisure behavior accounted for by these same variables as a drawback to their use, thus limiting their usefulness in predicitng leisure behavior and for planning recreation programs (Field and O'Leary, 1973; White, 1975; Kelly, 1980).

In their study of water based activities, Field and O'Leary used nine demographic variables and found that only for the activity of fishing was as much as twenty-six per cent of the variance accounted for by these nine variables. For the three other activities analyzed, less than five per cent of the variance was accounted for by the demographic variables

Kelly reviewed the literature and found that demographic variables, while sometimes accounting for only 10% of the variance, often reached the 30% level. White, studied five variables (income, occupation, education, family size and city size) and was able to predict as much as 21% of the variance in his leisure participation measures. Attempts have been made to increase the predictive power of the socio-demographic variable by using them in conjunction with other variables, or by grouping them to create new composite variables.

Composite Variables

Cheek and Burch (1976) observed that leisure participation was not an individualistic pursuit as implied by demographic survey analysis. They felt that most leisure was primarily a social activity and occurred in the context of differing social groups. They used variables that measured who one participated with (family, friends, family and friends) and found that there were significant differences between these groups in the type of water-based leisure activities engaged in. Field and O'Leary (1973) used similar variables in combination with demographic ones and found similar results. They also found that the amount of variance accounted for by these combinations increased dramatically. For example, nine demographic variables combined could only explain 3.4 percent of the variance in swimming but when the factor, friendship group, was added to these variables twenty-three percent of the variance was accounted for. Although these social groups have reasonable explanatory power, they do have a major drawback for the recreationist trying to determine the leisure behavior of his clientele. They will tell him the likely relationships between participants but will not necessarily tell him which of his clientele, and how many, will be participating.

The creation of a combination variable like family life cycle was an attempt to overcome this problem. Marital status, age and number of children and age of the parents have been the variables that were usually grouped together to produce stages of the family life cycle (Kelly, 1978; DeWitt and Goodale, 1980). Stages of the family life cycle proved to have some success in predicting both the nature and the amount of leisure involvement. Kelly found that marriage and parenthood decreases the amount of leisure participation. He also found that these factors affect who one participates with. After marriage the family became the focus of leisure participation.

Despite the apparent success of these combination variables the fact remains that a considerable proportion of the variance in leisure behavior cannot be accounted for by the standard socio-demographic variables that have been discussed so far. In an attempt to solve this problem researchers have examined variables other than social measures.

Other Correlates of Leisure Involvement

Knopp (1972), was interested in the effects of both the home and work environments on leisure behavior. He analyzed variables such as, population density, size of property and number of people in the work relationship, and concluded that these factors affected the individual's choice of leisure environment. He also found differences in the effect of these variables depending on whether the individual lived in a rural-farm, rural-non-farm or urban setting. Based on this study Knopp concluded that environmental determinants might prove useful in predicting leisure behavior differences even among differing urban groups. While the rural-urban differences in leisure participation have been examined (Hauser, 1962; Hendee, 1969), relatively little research has been devoted to within urban differences.

Hendricks (1971), was one of the few researchers to examine intra-urban differences in leisure behavior. He focussed on the type of residence lived in, feeling that it reflected the person's lifestyle, and hence would affect the person's choice of leisure. His study involved the analysis of similar (in terms of demography) urban populations whose difference lay in whether they lived in an apartment or a single family detached house. He found that apartment dwellers were twice as active as home dwellers in "urban leisure activities", ie. activities such as museum visiting and dancing. He further found that apartment dwellers were involved less than home dwellers in outdoor leisure (fishing, hiking, etc.), at least at a high level of participation. He observed that apartment dwelling was no longer a temporary condition that people were forced into until they could move into a house. It was instead a conscious lifestyle choice, and this was reflected in their leisure behavior.

In a Canadian study conducted in Toronto, Michelson (1973), analyzed the relationship between residence selection and participation in certain leisure activities. Data were gathered for this study by way of both personal interviews and time budget diaries. The sample was selected from middle class, married couples in their child-bearing years, who had recently decided to move to a different residence. Residences were classified as downtown apartments, downtown houses, suburb houses, and suburb apartments. Michelson found that there was a relationship between housing type selected and the individuals discretionary activities. People moving to apartments, particularily highrises, expected to spend more time on activities such as sport and less on house maintenance and gardening. Those moving to apartments also expected to be able to go "out" more often whereas, those moving to houses expected to entertain "in" more often.

Social Area Analysis

There appears to be a relationship, not only between leisure behavior and housing type, but also between leisure behavior and where the housing type is located within the urban area. Studies not directly concerned with leisure behavior have attempted to develop a typology of urban sub-areas (Shevsky and Williams, 1948; Greer, 1956; Kaufman and Greer, 1960). These studies used census tract data to rank enumeration districts on three variables, social rank, segregation, and urbanization.[4] This technique was known as social area analysis. Certain social behaviors, for example, voting behavior, within enumeration areas could then be analyzed for relationships to the three variables or combinations thereof. Social area analysis, however, did not create sub-areas that were necessarily linked to a spatial area within the city. The area types created were artificially related only by virtue of similar rankings on the three variables.

---

[4] Social rank was based on occupation and education: segregation measured the ratio of whites to nonwhites and foreign born; urbanization was a composite measure based upon fertility ratios, proportion of single family dwelling units and proportion of women in the labour force (Kaufman and Greer (1960).

Bell and Force (1956), took a slightly different approach in their study of San Francisco neighborhoods. They used existing spatial areas and then ranked each on the three variables, social rank, segregation, and urbanization. The segregation variable was held constant, and four neighbourhoods were chosen to represent the extremes on each of the other two variables. These researchers were interested in "formal association" (eg, fraternities, unions, service clubs) participation among the male residents of these neighborhoods. They found evidence to support their hypothesis that this behavior would vary depending on the neighborhood type in which the respondent resided. The "high family" (their term for the urbanization measure), "high status" neighborhood was almost twice as active in multiple association memberships as was the "low family", "high status" neighborhood. Both of these neighborhoods were significantly different from the other two. There was no significant difference between the two "low status". neighborhoods. Men from the "high status", "high family" area also held office in formal associations significantly more often then did men from the other areas. They also tended to go to meetings more often. The authors concluded that the status ranking was more important than the family ranking in differentiating formal associaton behavior.

The application of social area analysis to geographic neighborhoods is of interest to those searching for something other than the standard socio-demographic variables with which to predict leisure behavior. It is no longer necessary to analyze individual data and create artificial aggregate groups. The area or neighborhood of residence could instead be classified (on whatever scale) and the behavior predicted based on that evidence. This classification could be achieved using readily available census data, thereby simplifying considerably the task of the researcher.

In a somewhat different study, Ginsberg (1975), analyzed the leisure behavior of men in each of two neighborhoods in Tel Aviv. These neighborhoods, although close to each other geographically, differed in most other respects, for example, age of neighborhood, ethnic origin and occupation. The residents in each of these neighborhoods had different joint leisure patterns (leisure with their spouses) in terms of going to movies and cafes. There were different social structures in each of the two neighborhoods. The older, more established neighborhood resembled a 'village', and maintained the tradition and custom which separated men and women. In this neighborhood going to movies and cafes was done with one's peers and not one's spouse. The other neighborhood was a more modern and newer urban residential area. Male residents of this neighborhood did not adhere to traditional customs and spent much of their leisure in the company of their wives. Ginsberg concluded that the differences in leisure behavior between the residents of the two neighborhoods was due to the differences in the nature or character of the neighborhoods.

It remained then for social area analysis to be applied to the study of leisure behavior.

Neighborhood Types in The City of Edmonton

The City of Edmonton's Parks and Recreation Department was interested in finding a more accurate and reliable way to plan for the leisure needs of its clientele. It was decided to try a social area analysis procedure somewhat similar to that carried out in San Francisco by Bell and Force (1956). Census tract data for each of the existing neighborhoods in Edmonton was analyzed in the hope of finding similarities among them. The analysts went beyond the three dimensions (urbanism, social status, and ethnicity) used in the earlier Bell and Force(1956) study. They included measures of housing type and housing age in their analysis, as well as age, sex, marital status and education.

Unfortunately, the exact details of the analysis were not available. Due to staff turnover, and the fact that most of the statistical analysis was carried out by outside consultants, the documents containing these details were misplaced. The information that was available indicated that the analysis contained the following processes. A multiple regression technique was used to reduce the original number of measures by eliminating highly correlated items. Factor analysis was performed on the remaining variables resulting in four factors. A cluster analysis, using the factor scores, produced five groupings of neighborhoods. A sixth grouping contained all the new neighborhoods for which no census data were available. Information obtained from the *1979-83 Master Plan* produced by the Parks and Recreation Department indicates that the neighborhood types were established mainly on the basis of age of neighborhood, type of dwelling, and age of the residents.

A basic assumption underlying the Department's neighborhood type approach was that residents within each neighborhood type would be more similar in their leisure needs and interests, than individuls living in different neighborhood types. These differences in leisure needs and interests would require unique programming and planning for each neighborhood type. To date, there has not been a detailed analysis of leisure behavior that would support these assumptions. Frequency tables were produced for specific activities by neighborhood type (see Figure 1) but no statistical analysis was performed. It is the intention of this study to carry out an analysis that will test the assumption that leisure behavior varies by neighborhood type.

D. STATEMENT OF THE PROBLEM

Problem

Social area analysis has been used to study various kinds of social behavior. The behaviors examined have included such things as voting behavior (Kaufman and Greer, 1960), formal association membership (Bell and Force, 1956), and urbanization (Greer, 1956). The City of Edmonton used social area analysis to produce six neighborhood types and proposed that they could be used to predict leisure behavior. The problem dealt with in this study was to determine the usefulness of this particular social area analysis in predicting leisure behavior. More specifically, how did leisure behavior vary between the neighborhood types.

Hypothesis

Due to the lack of information pertaining to the relation of different neighborhood types to specific leisure behavior, no directional hypotheses were stated. Rather, it was decided to simply test the null hypothesis of no difference in leisure behavior between neighborhood types.

PARTICIPATION IN SELECTED RECREATION ACTIVITIES AMONG SIX NEIGHBOURHOOD TYPES

	Neighbourhood Types						
ACTIVITY	1	2	3	4	5	6	City
Badminton	10.8 %	9.6 %	9.4 %	9.1 %	17.6 %	6.5 %	10.4 %
Baseball	8.9	13.8	9.5	19.0	17.6	5.0	13.1
Canoeing	3.8	15.1	7.6	7.5	18.8	6.3	9.9
Cross-Country Skiing	10.1	5.3	17.0	7.5	27.1	4.8	12.1
Downhill Skiing	16.3	14.9	22.6	12.3	36.5	9.5	18.7
Gardening/Landscaping	15.2	15.2	13.3	10.8	15.3	25.4	15.1
Historic Site Touring	12.7	17.2	18.9	11.6	25.9	23.0	17.6
Horse-back Riding	6.3	10.8	3.8	10.7	3.5	3.2	6.6
Jogging	11.3	12.6	16.0	13.2	34.1	9.7	16.2
Lawn Darts	7.6	12.9	5.7	14.9	1.2	6.3	4.9
Nature Viewing	1.3	5.4	10.4	5.6	14.1	14.8	8.3
Physical Fitness	13.8	17.2	15.1	15.6	35.3	12.7	18.2
Playground Activities	5.1	7.4	7.5	10.7	5.9	15.9	8.6
Quilting	0.0	5.4	4.7	.8	1.2	0.0	2.2
Resin Craft	0.0	4.3	.9	.8	0.0	3.2	1.5
Sewing	11.3	16.3	12.3	16.4	27.4	15.9	16.5
Skateboarding	1.3	7.5	9.5	9.8	9.4	0.0	6.9
Soccer	3.8	14.0	10.4	15.0	14.3	4.8	11.0
Swimming	32.5	41.5	39.6	35.5	54.1	27.0	38.8
Tennis	22.5	12.8	21.7	10.7	27.1	3.2	16.6
Tobogganning	6.3	18.3	17.0	20.5	21.2	7.9	16.1
Trail Walking	16.5	20.4	16.2	11.6	25.9	11.3	16.9
Volleyball	15.2	18.1	10.4	13.2	21.2	9.5	14.6
Walking for Pleasure	45.0	40.9	34.9	28.7	52.9	36.5	39.0
Weaving	1.3	2.2	1.9	1.7	8.2	1.6	2.7
Whist/Bridge	12.5	18.3	8.6	11.6	28.2	11.3	14.8

SOURCE EDMONTON PARKS AND RECREATION SURVEY 1977

Figure 1 ACTIVITIES BY NEIGHBORHOOD TYPE:1977

Definition of Terms

Leisure Behavior consists of engagements or activities that are freely entered into, occur during non-work time, are mainly self-rewarding and have constructive or socially accepted outcomes. For the purposes of this study leisure engagements will include those listed on the survey instrument used by the City to gather data for the 1980 Leisure Survey. Further, they will include only those listed under the following headings: Outdoor Recreation, Active Sports/Athletics, and Arts and Cultural. Because this study is intended to focus on those leisure activities for which leisure agencies currently have some responsibility, those activities listed under Passive Leisure Activities will be excluded.

A *Neighborhood* is a defined spatial area within the City of Edmonton with a population ranging from three to seven thousand residents.

A *Neighborhood Type* consists of a grouping of neighborhoods all of which received similar rankings on variables such as age of neighborhood, age of residents, type of dwelling, and education level.[5]

Delimitations

This study did not set out to examine the validity of social area analysis as a technique, nor did it set out to analyze the processes carried out by the City of Edmonton to produce the neighborhood types.

---

[5] It was assumed that at least these variables were used in the grouping of neighborhood, because they were the ones mentioned in the Master Plan

Measures of leisure behavior were limited to those that could be obtained from the *1980 Leisure Study*.

Assumptions

It is assumed that the factor analysis conducted by the City of Edmonton to produce its six neighborhood types was done accurately and correctly. It is also assumed that the neighborhood characteristics discovered at the time of the factor analysis still exist and, therefore, still differentiate the six types of neighborhoods

Justification of The Study

The City of Edmonton used the neighborhood types as a major part of its *1979-83 Master Plan*, indicating that planning and programming were to be based on the neighborhood types. This document has been made public and has presumably, been used as a working document. It was felt to be important, therefore, to see if leisure behavior does vary by neighborhood type. To this date there have been no other attempts to do this.

II. METHODOLOGY

An analysis of secondary data was carried out to determine leisure behavior within each of the six neighborhood types. A comparison of this behavior between neighborhood types was then performed to determine if, and where, there were differences.

A. DATA

Source

The data to be used for this study were collected as part of a city-wide leisure survey of Edmonton. The purpose of this survey was to gather data describing the leisure behavior patterns of the citizens of Edmonton.

A two-stage systematic sample was drawn of all households in Edmonton. Addresses were initially grouped into the five administrative districts set up by the Parks and Recreation Department. Within each district addresses were further organized into one of the six neighborhood types. Addresses were then chosen in a systematic fashion until the required sample size for each neighborhood type within a city district was reached.

The sample frame used was the City of Edmonton's 1980 Census Tape in which addresses were listed by census tract and enumeration district. These census tracts and enumeration districts were manually matched to the neighboourhood type boundaries prior to the drawing of the sample. The size of the sample was determined by using a 95% ±10 confidence limit for each neighborhood type within a Recreation and Parks district. Computer assistance was required to group the addresses by neighborhood type and city districts, and was also used to make the final selection of the sample addresses. The total sample size was 2,081.

The survey was conducted in November 1980, using a detailed 10 page questionnaire (see Appendix A). This was a self-completed instrument that was both dropped off to and picked up from the respondents by professional survey staff. Each person over the age of 14 in each of the sample households was requested to complete the questionnaire. A free pass entitling the bearer to one free admission to either a city-owned pool or arena was offered as an incentive to the respondents. Information from the returned questionnaires was transferred to computer storage, and subsequent analysis was performed using the Statistical Package for the Social Sciences (SPSS).

Response Rate

The overall response to the survey was 55.5%. In other words, of the 2,081 households selected, 1,151 returned one or more questionnaires. The useable number of questionnaires obtained from this survey totaled 2,254, an average of slightly less than 2 per responding household. The breakdown of returned questionnaires by neighborhood type has been summarized in Table 1.

Table 1

Ratio: Respondents to Sample Size

1	2	3	4
Neighbourhood Type	Households Selected	Respondents	Ratio:3/2*
One	298	207	.695
Two	496	466	.94
Three	397	466	1.17
Four	296	358	1.21
Five	197	270	1.37
Six	397	487	1.23

* Information as to the numbers of households responding per neighborhood type was unavailable. The ratio used gave a measure of the strength of the response in each neighborhood type. It was selected as an alternate means of comparing response to the survey among the six different neighborhood types.

Representativeness

The City of Edmonton examined the representativeness of the survey population (Research and Planning,1981). The survey's population characteristics were compared to those of the population of Edmonton as a whole (see Appendix B). The survey population (within the 10% error limit) was quite similar to that of Edmonton. Certain population segments, senior citizens, widowers and retired persons, were under-represented. These characteristics seem to describe the same segment, and were probably under-represented because institutions were not sampled. Unemployed persons were also under-represented in the survey population, but no explanations were offered in the City's report.

B. DEPENDENT VARIABLES

The review of previous literature revealed that leisure behavior has been measured in many different ways. The most common being participation, (Lundberg *et al*; Clark,1958; White,1958; Field and O'Leary,1973; Burch,1969), frequency of participation (White,1975; Hendriks,1971; Curtis and Milton,1976), and number of activities participated in (Curtis and Milton,1976; Burton,1972; White,1975). These three variables were used in this study in the following manner. Three categories of leisure behavior (outdoor recreation, active sport/athletics, and arts and cultural) were analyzed separately to produce measures of each of the three variables. The general forms of the questions used to produce the dependent variables were as follows: (see Appendix A for more detail).

a) Have you participated in any 'Outdoor Recreation, Sports/Athletics, Arts and Cultural' activities **WITHIN THE LAST 12 MONTHS?**

[]YES []NO

b) Please indicate whether or not you have participated in any of the following 'Outdoor Recreation, Sports/Athletics, Arts and Cultural' activities in the Last 12 Months.

Check "Yes" or "No" for each activity. **For those activities marked "Yes" answer questions 'c' and 'd'.**

'Activity name' [] No []Yes

c) How many times in the Last 12 Months did you engage in each activity marked "Yes" in Question 'b'?

Times in Last Year

'Activity name' []1-10 []11-20 []21-30 []over 30

Participation Rate

In each leisure category respondents were requested to indicate whether or not they had engaged in that type of activity within the previous 12 months. If they had, they were then requested to answer questions about specific activities. It was originally intended to use the response to the category questions as the measure of participation. An examination of some preliminary frequency tables indicated, however, that several respondents who had failed to answer the category question had responded positively to questions on the individual activities. The final measure for the participation rate in a leisure category was achieved by measuring the percentage of respondents, within a neighborhood type, who had responded 'Yes' to the category question, or had not answered the category question but had responded positively to one or more specific activities.

Number of Different Activities Engaged In

The total number of different activities engaged in by each respondent was calculated. This was achieved by counting the number of positive responses to specific activity questions for each respondent. A mean within each leisure category was calculated for each neighborhood type.

Frequency of Participation

For each specific activity they had engaged in respondents were asked to indicate their frequency of participation by checking one of four frequency intervals (1-10; 11-20; 21-30; over 30) that measured the number of times per year he or she had engaged in a particular activity. The open endedness of the final interval precluded an overall frequency rate for each respondent. The measure chosen consisted of the number of activities checked for each frequency interval by the respondent. The mean number for each frequency interval was then calculated for each neighborhood type.

C. INDEPENDENT VARIABLES

The neighborhood types used in this study were the six neighborhood types developed by the city of Edmonton in its *1979-83 Recreation Master Plan*. These types were created by clustering individual neighborhoods based on certain socio-demographic characteristics. These included age, marital status, age of dwelling, education, and type of dwelling. For purposes of this study the different types have been given titles other than numbers. These titles indicate the main characteristic(s) describing the types: Type 1: Older, highrise; Type 2: Older, residential; Type 3: Middle-aged; Type 4: Younger; Type 5: Professional; Type 6: New.

A more detailed description of each type can be found in Figures 2 through 6.[6]

D. ANALYSIS

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data and produce the required statistics. The procedures used were identical for all three leisure categories. Descriptions of these procedures will, therefore, be of a general nature and will be applicable to each of the leisure categories.

Participation Rate

The measure used for participation rate was based on nominal data and, therefore, produced tables indicating proportions of various responses. Chi-square was chosen as the appropriate statistical test to determine whether participation rates differed among the six neighborhood types. The SPSS program 'Crosstabs' was used to perform the appropriate calculations, and the chi-square test was used to determine statistical significance. The decision point for significance was set at .05.

A significant chi-square could be produced when only one of the possible fifteen comparisons among six

---

[6] No census data were available for the new areas of the city and they were grouped together as Neighborhood Type 6. They were given the following general descripion: a *newly developing* neighborhood with a high proportion of young couples with very young children. The housing is mainly single-family, with some single attached and multiple-family dwellings. Because these are new neighborhoods, detailed demographic data were not available for them. (1979-83 Master Plan)

NEIGHBOURHOOD TYPE 1 - an *older* neighbourhood with a high proportion of people between the ages of 15 and 24 and over 55. This neighbourhood has many high density multiple dwelling units occupied by young singles, young couples with either no children or very young children, and older persons.

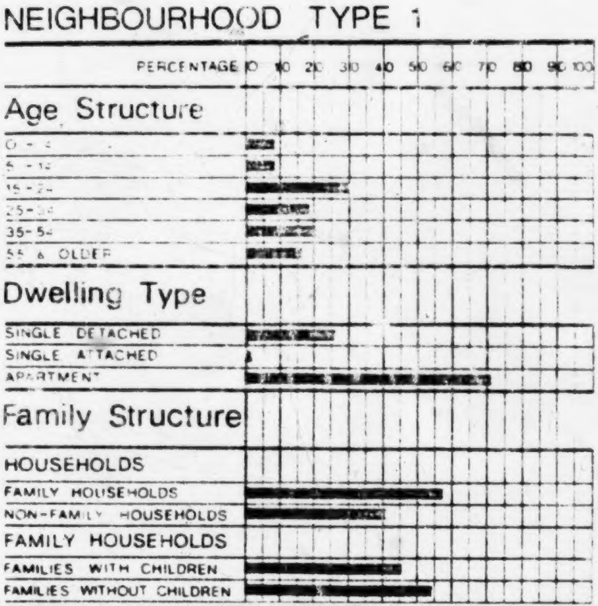


Figure 2 NEIGHBORHOOD TYPE ONE

NEIGHBOURHOOD TYPE 2 - an *older residential* neighbourhood with a high proportion of middle-aged and elderly couples with older children or children who have left home. This neighbourhood has a high proportion of both single family dwellings and high density multiple dwellings.

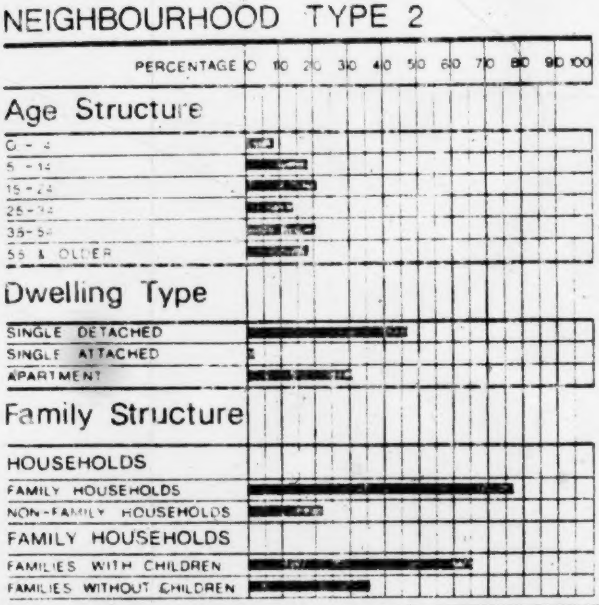


Figure 3 NEIGHBORHOOD TYPE TWO

NEIGHBOURHOOD TYPE 3 - a *middle-aged* neighbourhood with a high proportion of couples between the ages of 35 and 54 and children between the ages of 5 and 14. This neighbourhood has a high proportion of single-family dwellings.

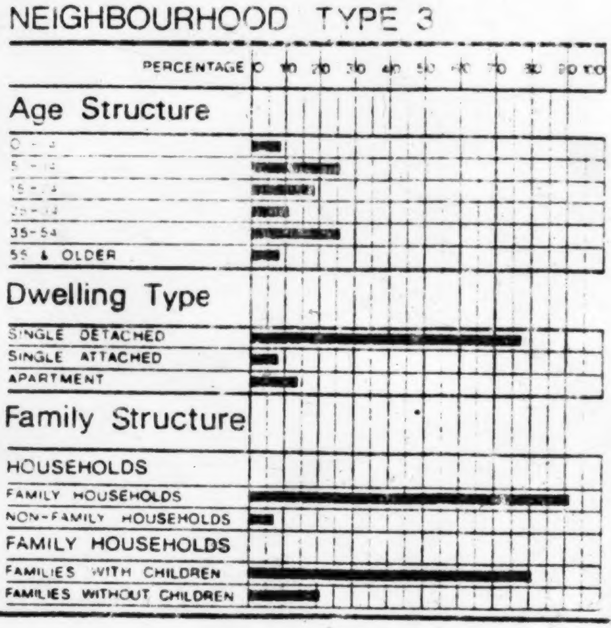


Figure 4 NEIGHBORHOOD TYPE THREE

NEIGHBOURHOOD TYPE 4 - a *younger to middle-aged* neighbourhood with a high proportion of married couples ranging from 25 to 34 years of age. There is a high proportion of children under the age of 14 and a high proportion of single family dwellings.

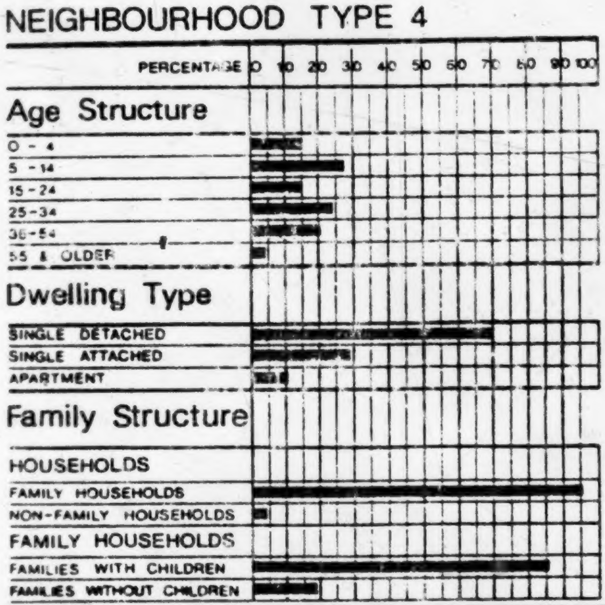


Figure 5 NEIGHBORHOOD TYPE FOUR

NEIGHBOURHOOD TYPE 5 - a *middle-aged* neighbourhood with a high proportion of middle-aged couples with children between the ages of 5 and 14. This neighbourhood is similar to Neighbourhood Type 3 except that Neighbourhood Type 5 has a higher proportion of its population in professional occupations.

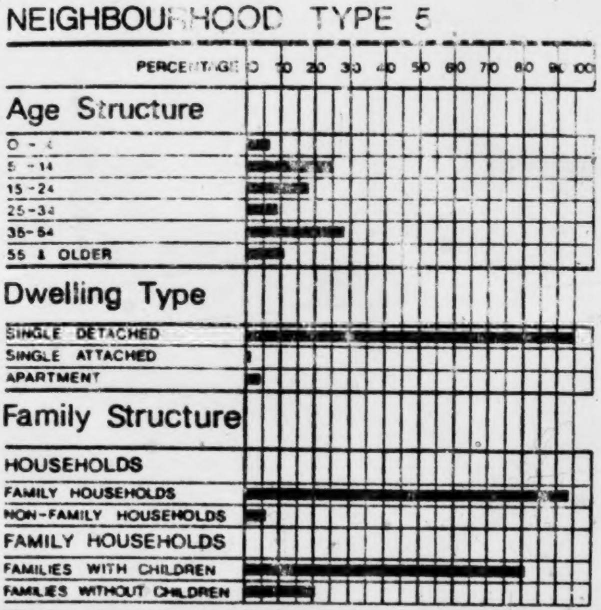


Figure 6 NEIGHBORHOOD TYPE FIVE

neighborhood types produced a significant difference. In order to determine which of the neighborhood types were in fact different from one another a *post hoc* multiple comparison procedure was used.

This procedure, taken from Marascuilo and McSweeney(1977), makes paired comparisons among the neighborhood types, and approximates methods that can be used for analysis of variance tests. The procedure maintains the probabililty of a type one error at the level set for the original chi-square test (in this case .05).

This procedure involves the construction of confidence intervals around estimates of the possible pair contrasts. The confidence interval is then tested for significance. If the confidence interval for a contrast does not embrace zero it is considered significant and the two neighborhood types thus compared are said to have different participation rates. For further detail see Appendix C.

Number of Different Activities Engaged In

The data for this measure was the mean number of activities participated in by respondents in each neighborhood type, providing a ratio level of measurement. Oneway analysis of variance could therefore be performed with neighborhood type as the independent variable. The SPSS program 'Oneway' was used to calculate the *F* probability statistic that there were differences among the neighborhood types. The decision level of significance was set once again at .05.

A significant overall *F* provided a similar problem to that described in the previous section dealing with a significant X^2, which particular comparison was causing the significant overall difference? Scheffe's test was used to make comparisons between pairs of neighborhood types.

This procedure is very similar to the *post hoc* procedure used for the variable Participation Rate; ie. it requires the construction of confidence intervals around estimates of the contrasts.

This process was performed using the SPSS program 'Oneway' with the 'Ranges' test set to 'Scheffe (.05)'.

There were two reasons that Scheffe's test was the one chosen to make the pairwise comparisons of means for the variable 'Number of Activities'. Scheffe's test was the most stringent of the *a posteriori* tests that can be used to investigate ANOVA tables. Although Kirk recommended Tukey's HSD test for pairwise comparisons instead of Scheffe's, Tukey's HSD was only approximate when cell sizes were unequal. Scheffe's test, however was exact even when cell sizes were not equal. The cell sizes in this study ranged from 207 to 487.

Frequency of Participation

The data available for this measure were a breakdown of that used for the variable Number of Activites. The mean number of activities engaged in by respondents was sub-divided into the four frequency intervals; 1-10 times per year, 11-20 times per year, 21-30 times per year, and over 30 times per year. This produced a mean for each category, and 'Oneway' and 'Scheffe (.05.)' were run on each category. The decision level for significance was also set to .05.

Summary

The null hypothesis was tested using three measures of leisure behavior in each of three leisure categories. These measures were "participation rate", "number of activities engaged in", and "frequency of participation" (in four frequency intervals). Scores for these measures were obtained for the six neighborhood types from data collected for a city-wide survey. Initial comparisons were made using chi-square (for "participation rate"), and one way analysis of variance (for the other measures). *Post hoc* analysis was undertaken to determine which neighborhood types differed from each other.

III. RESULTS

The results of this study will be presented in two parts. The first will describe the leisure behavior within each neighborhood type. The second part will deal with the results of the analysis carried out to test the study's hypothesis. This latter section will be divided into three sub-sections one for each of the leisure categories, outdoor recreation, sports/athletics, and arts and cultural.

A. LEISURE BEHAVIOR IN NEIGHBOURHOOD TYPES

Neighbourhood Type One: Older Highrise

These were older neighborhoods with a high proportion of apartments and young, single persons. This neighborhood had the smallest response rate ratio (see Table 1; Chapter II) among the six types. It also produced the fewest number of respondents, 207.

The type 1 neighborhood had the smallest number (4.25) of different activities engaged in for the Outdoor Recreation leisure category. In general this neighborhood type was near the low end of most of the measures of leisure behavior. The exception was in the Arts and Cultural category where this neighborhood had the second highest number (1.59) of different activities engaged in. The details of the leisure behavior for this type have been placed in Table 2.

Table 2 Neighborhood Type 1: Older Highrise

Participation Rate

Leisure Category	Per Cent Participating
Outdoor Recreation	90.6%
Sports/Athletics	73.2%
Arts and Cultural	57.4%

Number of Activities

Leisure Category	Average # of Activities
Outdoor Recreation	4.25
Sports/Athletics	3.65
Arts and Cultural	1.59

Frequency of Participation

Leisure Category	Average # of Activities In Each Category			
	'1-10'	'11-20'	'21-30'	'over 30'
Outdoor Recreation	2.55	.76	.22	.48
Sports/Athletics	1.86	.66	.32	.70
Arts and Cultural	.60	.29	.18	.43

Neighbourhood Type Two: Older Residential

These neighborhoods were also located in older areas of Edmonton, but in comparison to the type one neighborhoods contained significantly more single family dwellings, families with children, and older people (over 55). The type 2 neighborhoods, despite the fact they returned the second largest number of useable questionnaires (466), had the second smallest response rate ratio (.94, see Table 1). The type 2 neighborhood was the only one common to all the Parks and Recreation districts, and for this reason had the greatest number of households selected for the sample.

Type 2 reported the lowest rates of participation in all three leisure categories; 87.0% in Outdoor Recreation; 68.1% in Sports/Athletics; and 52.3% in Arts and Cultural. These respondents also reported the lowest number of different activites engaged in for the Sports/Athletics and Arts and Cultural categories, 3.36 and 1.35 respectively. The average number of different activities reported for Outdoor Recreation was 4.26 which placed type 2 .01 activities above the type 1 neighborhoods which reported the lowest average for this category. Table 3 summarizes the findings for this neighborhood type.

Neighbourhood Type Three: Middle-aged

Type 3 consisted of middle-aged neighborhoods with a high proportion of single family dwellings and middle-aged families (aged 35-55). These neighborhoods returned the same

Table 3 Neighborhood Type 2: Older Residential

Participation Rate

Leisure Category	Per Cent Participating
Outdoor Recreation	87.0%
Sports/Athletics	68.1%
Arts and Cultural	52.3%

Number of Activities

Leisure Category	Average #of Activities In Each Category
Outdoor Recreation	4.26
Sports/Athletics	3.36
Arts and Cultural	1.35

Frequency of Participation

Leisure Category	Average #of Activities In Each Category			
	'1-10'	'11-20'	'21-30'	'over 30'
Outdoor Recreation	2.73	.71	.30	.39
Sports/Athletics	1.80	.58	.31	.55
Arts and Cultural	.53	.26	.15	.36

number of useable questionnaires (466) as the type 2 neighborhoods, but from almost one hundred fewer sample households (397 vs. 496). This produced a response rate ratio of 1.17 (see Table 1).

The measures of leisure behavior for this neighborhood type were generally in the middle of the group. Table 4 contains the details of these measures.

Neighborhood Type Four: Younger

These were younger to middle-aged neighborhoods with a high proportion of young families (aged 25-34) and some multiple family housing. The response rate ratio for this neighborhood type was 1.21 (Table 1), and this produced 358 respondents. Neighbourhood type 4 produced the second smallest number of sample households (296).

The measures of leisure behavior for this neighborhood type were also in the middle of the group. In general they were slightly higher than the measures for the type 3 neighborhoods. The details of these measures have been presented in Table 5.

Neighborhood Type Five: Professional

These were middle-aged neighborhoods similar to type 3's but with a higher proportion of people engaged in professional occupations. These neighborhoods returned the highest number of useable questionnaires per household contacted, 1.37 (Table 1). The type 5 neighborhood was

Table 4 Neighborhood Type 3: Middle-aged

Participation Rate

Leisure Category	Per Cent Participating
Outdoor Recreation	90.7%
Sports/Athletics	73.1%
Arts and Cultural	57.6%

Number of Activties

Leisure Category	Average # of Activities
Outdoor Recreation	4.62
Sports/Athletics	3.81
Arts and Cultural	1.53

Frequency of Participation

Leisure Category	Average # of Activities In Each Category			
	'1-10'	'11-20'	'21-30'	'over 30'
Outdoor Recreation	2.85	.76	.30	.46
Sports/Athletics	1.92	.79	.33	.46
Arts and Cultural	.51	.36	.21	.39

Table 5 Neighborhood Type 4: Younger

Participation Rate

Leisure Category	Per Cent Participating
Outdoor Recreation	91.5%
Sports/Athletics	73.2%
Arts and Cultural	57.2%

Number of Activities

Leisure Category	Average # of Activities
Outdoor Recreation	4.57
Sports/Athletics	4.32
Arts and Cultural	1.52

Frequency of Participation

Leisure Category	Average # of Activities In Each Category			
	'1-10'	'11-20'	'21-30'	'over 30'
Outdoor Recreation	2.96	.75	.27	.43
Sports/Athletics	2.27	.75	.39	.64
Arts and Cultural	.53	.33	.18	.44

located in only two of the five Parks and Recreation Districts, resulting in the smallest sub-sample size of 197 households.

Type 5 neighborhoods reported the highest participation rates in all three leisure categories; 96.6% in Outdoor Recreation, 85.5% in Sports/Athletics and 68.4% in Arts and Cultural.

The respondents in these neighborhoods also engaged in the highest average number of different activities for all three categories. They were the only neighborhood type to report an average of greater than five (5.2) different activities engaged in for Outdoor Recreation.

The average number of Sports/Athletics engaged in by a type 5 respondent was 4.69. Type 5 also reported the largest average number (.83) of Sports/Athletics activities done more than 30 times per year.

An average of 1.73 different Arts and Cultural activities were engaged in annually, with 31.3% (.54) of these being done more than 30 times per year. These figures were also the highest actual and relative amounts in this category among the six neighborhood types. The measures of leisure behavior for this neighborhood type have been summarized in Table 6.

Neighborhood Type Six: New

Neighbourhoods in this type were not determined via the analysis conducted by the City of Edmonton's Parks and

Table 6 Neighborhood Type 5: Professional

Participation Rate

Leisure Category	Per Cent Participating
Outdoor Recreation	96.6%
Sports/Athletics	85.5%
Arts and Cultural	68.4%

Number of Activities

Leisure Category	Average # of Activities
Outdoor Recreation	5.19
Sports/Athletics	4.69
Arts and Cultural	1.73

Frequency of Participation

Leisure Category	Average # of Activities In Each Category			
	'1-10'	'11-20'	'21-30'	'over 30'
Outdoor Recreation	3.06	1.05	.33	.51
Sport/Athletics	2.17	1.03	.44	.83
Arts and Cultural	.56	.35	.15	.54

Recreation Department. They were placed in this group because they came into existence after the 1971 census was taken. These neighborhoods produced the largest group of respondents, 487. The response rate ratio for type 6 was 1.23 (Table 1), second only to the type 5 neighborhoods. Participation rates reported for this neighborhood type were also second only to those reported for type 5. Outdoor Recreation was participated in by 94.6% of the respondents, 82.3% engaged in Sports/Athletics, and 63.4% engaged in Arts and Cultural activities.

While the average number of different Outdoor Recreation activities (4.89) was the second largest, the average number of different Sports/Athletics activities engaged in was less than both type 4 and type 5 neighborhoods. The average number of Arts and Cultural activities participated in was 1.57, which was less than the average reported for type 5 and type 1. Further details on the measures of leisure behavior for neighborhood type 6 have been presented in Table 7.

B. THE COMPARISONS AMONG NEIGHBOURHOOD TYPES

Tables 8,9,10, and 11 summarize the leisure behavior results discussed in the previous section. Table 8 contains 'participation rates', and 'number of activities' by neighborhood type, while tables 9,10 and 11 contain the 'frequency' measures by neighborhood type.

Table 7 Neighborhood Type 6: New

Participation Rate

Leisure Category	Per Cent Participating
Outdoor Recreation	94.6%
Sports/Athletics	82.3%
Arts and Cultural	63.4

Number of Activities

Leisure Category	Average # of Activities
Outdoor Recreation	4.89
Sports/Athletics	4.29
Arts and Cultural	1.57

Frequency of Participation

Leisure Category	Average # of Activities In Each Category			
	'1-10'	'11-20'	'21-30'	'over 30'
Outdoor Recreation	3.26	.79	.29	.41
Sports/Athletics	2.24	.80	.38	.59
Arts and Cultural	.53	.37	.19	.40

Table 8 Participation Rate and Number of Activities

Neigh. Type	Leisure Category					
	Outdoor Recreation		Sports/ Athletics		Arts and Cultural	
	Rate*	Activ.#	Rate*	Activ.#	Rate*	Activ.#
One	90.6%	4.25	73.2%	3.65	57.7%	1.59
Two	87.0%	4.26	68.1%	3.36	52.3%	1.35
Three	90.7%	4.62	73.1%	3.81	57.6%	1.53
Four	91.5%	4.57	78.4%	4.32	59.4%	1.52
Five	96.6%	5.19	85.5%	4.69	68.7%	1.73
Six	94.6%	4.89	82.3%	4.29	63.6%	1.57

* Participation Rates / Percentage of respondents engaging in that type of activity
# Number of different activities engaged in.

Table 9 Frequency: Outdoor Recreation

Neigh. Type	Frequency Category			
	'1-10'	'11-20'	'21-30'	'over 30'
One	2.59	0.76	0.22	0.48
Two	2.73	0.71	0.30	0.39
Three	2.85	0.76	0.30	0.46
Four	2.96	0.75	0.27	0.43
Five	3.06	1.05	0.33	0.51
Six	3.26	0.79	0.29	0.41

Table 10 Frequency: Sports/Athletics

Neigh. Type	Frequency Category			
	'1-10'	'11-20'	'21-30'	'over 30'
One	1.86	0.66	0.32	0.70
Two	1.80	0.58	0.31	0.55
Three	1.92	0.79	0.33	0.52
Four	2.27	0.75	0.39	0.64
Five	2.17	1.03	0.44	0.83
Six	2.24	0.80	0.38	0.59

Table 11 Frequency: Arts and Cultural

Neigh. Type	Frequency Category			
	'1-10'	'11-20'	'21-30'	'over 30'
One	0.60	0.29	0.18	0.43
Two	0.53	0.26	0.15	0.36
Three	0.51	0.36	0.21	0.39
Four	0.53	0.33	0.18	0.44
Five	0.56	0.35	0.15	0.54
Six	0.53	0.37	0.19	0.40

Outdoor Recreation

Participation Rates

The comparison of participation rates among the neighborhood types involved the use of the chi-square statistic. The proportional data used to calculate chi-square has been summarized in Table 12. The calculated chi-square was significant at the .001 level of significance, hence the Outdoor Recreation participation rates of the neighborhood types were considered different.

Table 11

Outdoor Recreation: Participation Rates

Neighborhood Type	No	Yes
One	9.4%	90.6%
Two	13.0%	87.0%
Three	9.3%	90.7%
Four	8.5%	91.5%
Five	3.4%	96.6%
Six	5.4%	94.6%

Chi-square = 27.4; degrees of freedom = 5;
probability <.0001

In order to determine wherein this difference lay, multiple paired comparisons were conducted . The significant chi-square arose because of differences between neighborhood type 2 and neighborhoods type 5 and 6. The details of this *post hoc* analysis have been placed in Appendix C.

Number of Activities

The mean number of activities by respondent was calculated for each neighborhood type (Table 13). One way analysis of variance was conducted with neighborhood type being the independent variable. The calculated *F* had a probability of .0001 thus exceeding the decision level of significance which was set at .05. This indicated that the mean number of activities engaged in by respondents were different across neighborhood types.

Scheffe's test was used to conduct *post hoc* multiple paired comparisons. Differences were found for the following pairs; type 2 and type 5, type 2 and type 6, and type 1 and type 5. No other significant differences were found. The details of this analysis have been placed in Appendix C.

Table 13

Outdoor Recreation: Number of Activities

Neighborhood Type	Average # of Activities
One	4.25
Two	4.26
Three	4.62
Four	4.57
Five	5.19
Six	4.89

Degrees of freedom (5;2248); *F* ratio = 5.088; *F* probability <.0001.

Frequency of Participation

For each leisure category there were four measures of frequency, corresponding to the four "times per year" categories used on the *1980 Leisure Survey* questionnaire. Each measure consisted of the average number of activities engaged in by respondents at each level of frequency. For each frequency category, therefore, a one way analysis of variance was conducted with neighborhood type as the independent variable.

For Outdoor Recreation, two of the four frequency categories were found to have significantly different means (Table 14). They were the '1 - 10', and the '11 - 20' categories. Scheffe's test on the '1 - 10' category means revealed that neighborhood type 6 had a significantly different mean from both type 1 and type 2, but that no other differences among the neighborhoods were significant at the .05 level. The same test on the '11 - 20' category indicated that the *F* was significant because differences existed between type 5 and types 2,3 and 4. No other paired differences were significant at the .05 level. Details of this analysis have been placed in Appendix C.

Table 14

Outdoor Recreation: Frequency of Participation

Neighborhood Type	Frequency	Category
	'1-10'	'11-20'
One	2.59	.76
Two	2.73	.71
Three	2.85	.76
Four	2.96	.75
Five	3.06	1.05
Six	3.26	.79
F probability	.0022	.0016

Summary

In the Outdoor Recreation leisure category four of the six measures of leisure behavior resulted in a significant difference being indicated among the neighborhood types. Further investigation revealed that the differences could be traced to a relatively small number of paired neighborhood differences. There were 90 possible paired comparisons from the four measures. Only ten of these proved to have significant differences. Neighborhood type 6 and neighborhood type 5 were both significantly different from neighborhood type 2 on three of the four measures. For the measure, 'participation rate', differences arose only between neighborhood type 2 (older, residential) and types 5 (professional) and 6 (new). In both cases measures for type 2 were lower. For 'number of activities'; type 2 was again different (lower) from types 5 and 6, and type 1 (older highrise) also proved different (lower) than type 5. For the '1-10' frequency category both types 1 and 2 were significantly lower than type 6. Type 5 had a significantly higher measure than types 2,3 (middle-aged) and 4 (younger) in the '11-20' frequency category.

Sports/Athletics

Participation Rate

The participation rate measure for this leisure category was identical to that used for Outdoor Recreation, therefore, chi-square was used to test for equality of proportions. These proportions have been displayed in Table 15. The calculated value of X^2 for this comparison proved significant beyond the .001 level.

Table 15

Sports/Athletics: Rate of Participation

Neighborhood Type	No	Yes
One	26.8%	73.2%
Two	31.9%	68.1%
Three	26.9%	73.1%
Four	21.6%	78.4%
Five	14,5%	85.5%
Six	17.7%	82.3%

Raw X^2 = 43.24; degrees of freedom = 5; probability < .001

The ensuing *post hoc* multiple comparisons revealed a number of paired differences that were significant at the .05 level. Neighbourhood type 2 was different from neighborhood types 4, 5 and 6. Neighbourhood type 3 was also different from both neighborhood type 5 and type 6.

See Appendix C for the complete details of this analysis.

Number of Activities

The one-way analysis of variance performed on the mean number of activities per respondent by neighborhood type (see Table 16) produced an *F* ratio with a probability less than .001 that the difference was due to chance. The level of signficance was set at .05. Therefore, it was accepted that the means were in fact different.

Table 16

Sports/Athletics: Number of Activities

Neighborhood Type	Average # of Activities
One	3.65
Two	3.36
Three	3.81
Four	4.32
Five	4.69
Six	4.29

Degrees of freedom = (5:2248); *F* ratio = 5.978; *F* probability < .001

The subsequent paired comparisons using Scheffe's test indicated that only three of the comparisons were significantly different. Type 2 proved to be different from three other neighborhood types, type 4, type 5 and type 6. Further details of this analysis can be examined in Appendix C.

Frequency of Participation

One-way analysis of variance was conducted on each of the four frequency categories. Two of the categories, '1-10', and '11-20', produced significant *F* ratios indicating that the means of the six neighborhood types were different.

Table 17

Sports/Athletics: Frequency of Participation

Neighborhood Type	Frequency	Category
	'1-10'	'11-20'
One	1.86	.66
Two	1.80	.58
Three	1.92	.79
Four	2.27	.75
Five	2.17	1.03
Six	2.24	.80
F probability	.01	.0001

The *post hoc* multiple comparisons for the '1-10' frequency category failed to produce any significant paired differences when Scheffe's test was used. For the '11-20' frequency category one paired comparison proved significantly different. There was a difference between neighborhood type 2 and neighborhood type 5. The details of this analysis have been placed in Appendix C.

Summary

Four of the six measures of leisure behavior for the Sports/Athletics category were significantly different among the neighborhood types. These measures, 'participation rate',' number of activities', '1-10' frequency, and '11-20' frequency, were the same ones that proved significant in the Outdoor Recreation category. Once again these 'significant' differences could be attributed to differences between only a few of the neighborhood types.

For 'participation rate' five of the fifteen possible pairs were significantly different. Type 2 (older, residential) had a lower participation rate than types 4 (younger), 5 (professional) and 6 (new). Type 3 (middle-aged) also had a lower participation rate than type 5 and type 6. For the 'number of activities' measure, the paired comparison analysis indicated that differences existed between neighborhood type 2 and types 4, 5 and 6 only. These three neighborhood types all had higher measures than type 2. Although the ANOVA for the '1-10' frequency category indicated a significant difference, the *post hoc* analysis found none of the paired comparisons to be significantly different. The same analysis applied to the '11-20' category discovered significant differences between neighborhoods type 5 and 6. Type 5 neighborhoods had a higher measure in this frequency category than did the type 6's.

In the Sports/Athletics category only 9 of the 90 possible comparisons were significantly different. The differences between types 2 and types 4, 5 and 6 were consistent for only two of the measures, 'participation rate', and 'number of activities'. No other differences between neighborhood types were consistent across measures of leisure behavior in the Sports/Athletics category.

Arts and Cultural

Participation Rate

The comparison of participation rates in Arts and Cultural activities among the six neighborhood types once again involved the chi-square statistic (see Table 18). The calculated X^2 was significant thus indicating that participation rates were different.

Table 18

Arts and Cultural: Participation Rates

Neigbour-hood Type	No	Yes
One	42.3%	57.7%
Two	47.7%	52.3%
Three	42.4%	57.6%
Four	40.6%	59.4%
Five	31.3%	68.7%
Six	36.4%	63.6%

Raw $X^2=22.47$; degrees of freedom=5; probability $< .001$

The *post hoc* multiple comparisons performed for this measure indicated that two of the comparisons had significant differences. Neighborhood type 2 had a significantly different rate of participation from both neighborhood type 5 and type 6. The details of this analysis have been placed in Appendix C.

Number of Activities

The one-way analysis of variance performed on the mean number of different Arts and Cultural activities engaged in by respondents in the different neighborhood types indicated that there were no significant differences among the means.

Table 19

Arts and Cultural: Number of Activities

Neighborhood Type	Average # of Activities
One	1.59
Two	1.35
Three	1.58
Four	1.52
Five	1.73
Six	1.57

Degrees of freedom=(5;2248);*F* Ratio=1.469;*F* Probability=.1969

The non-significant *F* ratio precluded any further comparisons among the means. (see Appendix C for the detailed ANOVA table)

Frequency of Participation

None of the four frequency categories proved to have signficant *F* ratios (see Appendix C). The means of the six neighborhood types were not considered different in each frequency category, and as stated above further comparisons would have been meaningless.

Summary

In this leisure category only one of the measures 'participation rate', indicated that significant differences existed among the neighborhood types. The paired comparison test used to analyze these differences revealed that this significance arose because neighborhood type 2 (older,residential) had lower participation rate than both types 5 (professional) and 6 (new).

Summary of Results

In each leisure category at least one, and as many as four, of the measures of leisure behavior seemed on the surface to support the hypothesis (ie. leisure behavior varies by neighborhood type). Both the Outdoor Recreation and the Sports/Athletics leisure categories had four measures indicating that differences existed among the neighborhood types. In both cases these measures were 'participation rate', 'number of activities', the '1-10- frequency category, and the '11-20' frequency category. For the Arts and Cultural leisure category only one measure, 'participation rate', indicated that differences existed among the neighborhood types.

Post hoc analyses of these differences consisted of making paired comparisons among the neighborhood types. These analyses revealed which neighborhood types differed from each other. The only consistent differences that could be found were between neighborhood type 2 and neighborhood types 5, and between neighborhood type 2 and neighborhood type 6. The following list contains all the significant paired comparisons by leisure category and behavior measure.

1. Outdoor Recreation
    a. Participation rate
        1) type 2 and types 5 and 6
    b. Number of activities
        1) type 2 and types 5 and 6; type 1 and type 5
    c. Frequency: '1-10' times per year

        1) types 1 and 2 and type 6
    d. Frequency: '11-20' times per year
        1) types 2,3 and 4 and type 5
2. Sports/Athletics
    a. Participation rate
        1) type 2 and types 4,5 and 6; type 3 and types 5 and 6
    b. Number of activities
        1) type 2 and types 4,5 and 6
    c. Frequency: '1-10' times per year
        1) None
    d. Frequency: '11-20' times per year
        1) type 2 and type 5
3. Arts and Cultural
    a. Participation rate
        1) type 2 and types 5 and 6

Each of the fifteen different comparisons of neighborhood types was made on eighteen measures in the study (6 measures X 3 leisure categories). For 11 of the 15 possible paired comparisons a significant difference arose one or fewer times out of 18 possible occurences. One paired comparison (2 and 5) was significantly different on 7 out of 18 possible occurences. One other pair (2 and 6) was different on 6 of the 18 measures, and two others (3 and 5; and 2 and 4) were significantly different on 2 out of 18 . A total of 270 (15 pairs X 18 measures) paired comparisons were possible. Twenty-nine of these proved to measure significant differences, and thirteen of these involved only two of the pairs; type 2 and type 5, and type 2 and type 6.

It should be noted that there were some difficulties in interpreting the results from the frequency measures. The nature of the measure (average number of activities engaged in per frequency interval) meant that frequency was being measured four different times. The difficulty arose in interpreting the direction of the differences. For example, if a neighborhood type has a higher average number of activities engaged in '1-10' times per year, does this mean that its respondents participate less frequently, or more frequently than respondents from the other neighborhood types. All that really could be said was that the neighborhood types were different. Unfortunately, little could be said about the diretion of that difference.

The data analyzed in this study provides support for the hypothesis that leisure behavior does not vary significantly by neighborhood type. The hypothesis holds for all three of the leisure categories but was most strongly supported for the Arts and Cultural category. There were however, two consistencies revealed by the data. Neighborhood type 2 (older, residential) had a lower incidence of leisure behavior than both neighborhood type 5 (professional) and neighborhood type 6 (new). Respondents from the type 2's participated at a lower rate and engaged in fewer different activities than the respondents from both the type 5 and type 6 neighborhoods.

C. DISCUSSION

Neighborhood type 2 (older, residential) respondents consistently reported the lowest participation rates, and the fewest number of different activities engaged in, for all three leisure categories. These respondents also reported the lowest (except for Sports/Athletics where they were the second lowest) number of activities engaged in more than thirty times per year. [7]

On the other end of the scale, type 5 (professional) neighborhoods had the highest participation rates, the largest number of different activities, and the largest number of activities engaged in more than 30 times per year.

The age structure of the type 2 neighborhoods as presented in the *1979-83 Master Plan*, indicated that in comparison to the other neighborhood types, they had the largest proportion of residents in the '55 and older' category. Age, having a negative effect on participation, was probably one of the factors affecting the leisure behavior patterns of these neighborhoods. The percentage of the respondents to the survey from neighborhood type 2 who fell in this age category was also the largest among the six types. Age was apparantly not an important factor in determining leisure behavior in the type 5 neighborhoods. The age characteristics of type 5 respondents were similar to the average, and not on the young side as might have been expected.

---

[7] This measure was chosen as representative of of a high frequency of participation in the absence of an overall frequency measure.

While education level was not specified in the *1979-83 Master Plan*, at least in terms of specific levels reached by residents of the various neighborhood types, there was a reference to 'professionals' as being the difference between type 5 and type 3. The fact that one has a 'professional occupation' usually implies a high education level. Education has been found to be positively related to both participation rates and number of activities engaged in (White, 1975; Curtis and Milton. 1976). The type 5 education level was the highest of the 6 neighborhoods. 43.5% of these respondents had attended at least some university. This was in comparison to type 2 respondents of whom only 28.9% had attained this level of education. The type 2 respondents did not have the lowest education level even though this could have been expected because of their low scores on the measures of leisure behavior. The type 2 education level was approximately at the average.

These two neighborhood types were on opposite ends of the leisure behavior measures in almost every case (ignoring the other three measures of frequency), and the differences between them proved significant for six of the eighteen possible measures. These measures were 'participation rate' in all three leisure categories; 'number of activities engaged in' and the '11-20' times per year frequency interval in both the Outdoor Recreation and Sports/Athletics categories. Although the actual scores on the various measures can be explained in part by specific socio-demographic variables (age for type 2 and education for type 6), the reasons for the differences between the two types were not as evident. The type 2 residents were, on the average, older than the type 5 respondents, however, type 5 was far from the youngest of the neighborhood types. The same holds true for education level. Type 5 respondents were the most educated of the six types, but type 2 respondents were not the least educated. Some other factor or combination of factors were also influencing the leisure behavior of these two types and produced the significant differences that were found.

The type 6 neighborhoods were also significantly different from the type 2's on five of the nine measures discussed previously. The type 6 neighborhoods, although treated as a separate cluster in this study, were not produced by the analysis that came up with the other five. Instead, this cluster consisted entirely of new neighborhoods for which no census data were available. The only evident characteristic of these neighborhoods was age of the neighborhood. There was no certainty that they would have rated different from the type 4's (they were rated as the youngest of the neighborhoods) on this characteristic. There was, therefore, but limited evidence that the type 6's would have been characterized as a unique grouping of neighborhoods had they been subjected to the proper analysis. For this reason little can be said about the differences that were found between this neighborhood type and the others.

IV. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

This study has examined the usefulness of the neighborhood typology put forth by the City of Edmonton's Parks and Recreation Department, in predicting leisure behavior. Neighborhoods were clustered on the basis of various socio-demographic variables. The City then proposed that the residents within each cluster (called a neighborhood type) would exhibit different leisure behavior from the residents of the other neighborhood types. The City had hoped to be able to plan and implement recreation programs based on these differences.

There was only limited information available concerning the methods used by the City to arrive at their neighborhood types. Little or no documentation could be located, and information had to be obtained through an interview with a former employee who was several years removed from the project. For this reason no predictions could be made as to how each neighborhood type might vary from the others. Instead, the null hypothesis was tested, ie. there would be no differences in leisure behavior among the neighborhood types. For the same reasons, the validity of the process that produced the neighborhood types was not examined, and it had to be assumed that the groupings of neighborhoods was the result of their having some similar characteristics.

The data used to test the hypothesis was from a city-wide survey on leisure conducted by the Parks and Recreation Department in Edmonton, in November of 1980. (The 1980 Leisure Survey) This survey gathered information on many different aspects of leisure, varying from activity participated in, to why one did not participate in certain types of leisure behavior.

The measures of leisure behavior used in this study were rate of participation, number of different activities engaged in, and frequency of participation.[8] Leisure behavior itself was divided into three categories: Outdoor Recreation, Sports/Athletics, and Arts and Cultural.

The hypothesis of no difference between neighborhood types was initially tested via tests for homogeneity of proportions (in the case of 'participation rates'), and tests of homogeneity of means (for the other measures). These tests were conducted separately for each of the three leisure categories. In the Outdoor Recreation and Sports/Athletics categories four of the six measures indicated significant differences existed among the neighborhood types. Only one measure gave a similar indication in the Arts and Cultural category. Because of the generality of these measures,[9] further analysis was required to identify which specific neighborhood types were different in their leisure behavior.

---

[8] Due to the nature of the question on the survey instrument, this last measure was in fact four separate measures of frequency of participation.

[9] A significant difference can be indicated when only two of the neighborhood types have different proportions or means. With six neighborhood types there were a total of fifteen possible comparisons of two types.

The *post hoc* analysis involved paired comparisons among the neighborhood types. These tests revealed that the significant differences found by the initial tests for homogeneity were usually due to differences between two or three types. The only consistent differences found were between type 2 (older, residential) and type 5 (professional), and between type 2 and type 6 (new).

B. CONCLUSIONS

It was proposed that leisure behavior would vary by neighborhood type. The data analyzed provided very little support for this postulate. The evidence supporting a difference in leisure behavior between neighborhood types involved three of the types.

The neighborhood typology was successful in differentiating leisure behavior between type 2 and type 5, and if we accept type 6 as a separate cluster the typology was also successful in differentiating type 2 and type 6. This gives some hope that the social area analysis carried out by the City of Edmonton might yet be developed into a useful tool for predicting leisure behavior. At present, however this composite model with a spatial component added to socio-demographic variables does not appear much effective than the primary sociological variables (age, education, etc.) themselves.

A number of factors made it difficult to interpret the generally negative results. One interpretation was that the neighborhood types were obsolete in 1980. Redevelopment in the older residential areas since the 1971 census has increased the population density of these neighborhoods. Many areas that were once primarily single family housing areas have become well-populated with walk-ups and highrise apartment buildings. One of the characteristics that was used to distinguish one neighborhood type from another was type of dwelling. A change in the mix of dwelling types might well lead to a different clustering of the neighborhoods into types if the procedure were repeated. Similar changes over the ten year period may also have affected the other characteristics that describe a neighborhood type. Nevertheless, for the neighborhood type idea to be useful in predicting leisure behavior, a degree of permanence in neighborhood type and leisure behavior must be assumed.

Another explanation for the results might be that the quality of the data did not allow an adequate test. Response to the survey was slightly better than 55%. While this is fairly high for the type of survey that was conducted,[10] 45% of the sample did not answer the questionnaire. Response ratios also varied by neighborhood type, and while the representativeness of the survey sample as a whole was established, it was not established within each neighborhood type. The non-respondents to the 1980 Leisure Survey might well have been a major contributing factor to the results produced in this study. Leisure behavior may have been similar across neighborhood types because only a certain type of person was encouraged to respond to the survey. The 55% response rate and the evidence of representativeness were, however, considered to be sufficient for the analysis that was undertaken.

---

[10] An acceptable response rate is 50% while a good response rate is 60%(Babbie, 1973)

Finally, this study gives no consideration to supply factors and how they affect participation behavior. There is some evidence that supply, or opportunities available, have a positive affect on the frequency of participation (Smith, 1980), and also influences the rate of non-participation (ie. no opportunity, no participation) (Romsa and Hoffman, 1980). Holding the supply factor constant during the analysis might have given more significance to the differences in leisure behavior among the neighborhood types. The supply factor is a variable that perhaps should have been included in the analysis that produced the neighborhood types. There is no evidence to suggest that supply was considered as a variable when the analysis was performed.

C. RECOMMENDATIONS

It is recommended that the analysis that derived the neighborhood types be repeated (and this time fully documented) using both the 1971 federal census data and the most recent update (1981 if possible) of that data. The former is to ensure that the procedures used are correct, and that the same groupings of neighborhoods can be produced. The latter is suggested so as to update the groupings and to include those areas (type 6) that could not be analyzed in the original study. Not only may the groupings of neighborhoods be different, but the variables may also load differently on the factors, thus producing different characteristics to describe the clusters.

Until this kind of replication occurs or some substantiating documentation of the first analysis can be found, there is little use in utilizing the neighborhood typology in further studies. If the typology can be confirmed, however, there are several further studies that could be undertaken. A replication of this study is recommended only if the clustering of neighborhoods is altered in some manner. Instead, it is suggested that a more detailed interview survey be carried out. These surveys generally can achieve response rates in the ninety percent range and thus can provide a sample that has a greater likelihood of representing the population. This type of survey, therefore, would reduce the chances that the non-respondents were adversely affecting the results.

A study using participation in specific activities as a measure of leisure behavior is also recommended. One of the characteristics the neighborhood type model uses is type of dwelling. There is some evidence that the type of dwelling lived in influences the specific type of leisure activities participated in(Hendricks, 1971). Information as to the specific activities participated in by respondents, is available from the *1980 Leisure Survey* so that this kind of study could be easily done. Success with this type of study could also give strong support for the need to redo the neighborhood type analysis, although it is strongly suggested that the latter should be carried out before any further work is done.

This study has provided little support for the hypothesis that leisure behavior varies by the neighborhood types defined by the City of Edmonton. Until the analysis that produced the neighborhood types has been verified and updated, it is suggested that it not be used in planning and programming for recreation by the Parks and Recreation Department in Edmonton. The use of this model by other cities is also not recommended until these same tests have been undertaken.

Most of the empirical evidence in this study points to a rejection of the neighborhood types as a valid predictor of leisure behavior. However, there still remains a great deal of merit in this approach to the continuing problem that faces most city recreation departments. How do we know what the people want, or rather how do we predict what they want with at least a resonable degree of success? The traditional standards approach is perhaps even less useful for planning leisure opportunities, and the City of Edmonton took an innovative step with the use of neighborhood types.

As with any bureaucracy dealing with human behavior, a recreation department must attempt to get some insight into that behavior. There are many factors involved in determining an individual's or a collection of individuals' behavior patterns. The science of the study of human interaction is as yet hardly developed enough to be more than occasionally predictive. Although the neighborhood types failure to predict leisure behavior completely should not be surprising, there is something appealing about this attempt to relate leisure behavior to where we live. Who we are (demographically speaking) and where we live should have considerable affect on what we do with our leisure time. The neighborhood typology should be viewed as a tentative step towards understanding the factors influencing leisure behavior in an urban setting.

BIBLIOGRAPHY

Babbie, E.R. *Survey Research Methods*. Belmont, California: Wadsworth Publishing Company, Inc., 1973.

Bell, W., and M.T. Force. "Urban Neighbourhood Types and Participation in Formal Associations." *American Sociological Review*. 21:1: 25-34, 1956.

Burch,W.R. "The Social Circles of Leisure: Competing Explanations." *Journal of Leisure Research*. 1:2:125-147, 1969.

Burdge, Rabel. "Levels of Occupational Prestige and Leisure Activity." *Journal of Leisure Research*, 1:3:262-274, 1969.

Burton, T.L. *Experiments In Recreation Research*. London: George Allen and Unwin Ltd.,1972

Cheek,N.H., and W.R.Burch. *The Social Organization of Leisure In Human Society*. New York: Harper and Row, 1976.

Clark, Alfred, E. "Leisure and Occupational Prestige." E.

Larrabee and R. Meyersohn (eds.). *Mass Leisure.* Glencoe Illinois: Free Press, 1958.

Curtis, J.E. and B.G. Milton, "Social Status and The Active Society." R.S. Gruneau and J.G. Albinson (eds.). *Canadian Sport, Sociological Perspectives.* Don Mills, Ont.: Adisson-Wesley Canada Ltd., 1976.

De Grazia, S. *Of Time, Work, and Leisure.* Garden City New York: Anchor Books, 1964.

DeWitt, P.A. and T.L. Goodale. "The Relationships Between Barriers to Leisure Fulfillment and Family Stages." Ottawa: Department of Recreology, University of Ottawa, 1980 (Mimeographed.)

Driver, B.L., and S.R. Tocher. "Towards a Behavioral Interpertation of Recreational Engagements With Implications For Planning." B.L. Driver (ed.), *Elements of Outdoor Planning.* Ann Arbour, Mich.: University Microfilms, 1970.

Edgren, B. "The Interests and Pursuits Of Boys and Girls in Out of School Recreation and Activities." *Research Quarterly.* 8:57-68, October, 1937.

Field, D.R., and J.T. O'Leary. "Social Groups as a Basis For

Assessing Participation In Selected Water Activities." *Journal of Leisure Research.* 5:2:16-25, 1973.

Ginsberg, Y. "Joint Leisure Activities and Social Networks in Two Neighbourhoods In Tel Aviv." *Journal of Marriage and The Family.* 37:3:668-676, 1975.

Godbey,G. and S. Parker. *Leisure Studies and Services: An Overview.* Philadelphia: W.B. Saunders Co., 1976.

Gray, David. "Exploring Inner Space." *Parks and Recreation.* 7:12:18-19, 1972

Greer, Scott. "Urbanism Reconsidered: A Comparitive Study of Local Areas in a Metropolis." *American Sociological Review.* 21:1: 19-24, 1956

Hall, M. Ann. "Sport and Physical Activity in the Lives of Canadian Women." R.S. Gruneau and J.G. Albinson (eds.). *Canadian Sport, Sociological Perspectives.* Don Mills, Ont.: Adisson-Wesley Canada Ltd., 1976.

Hawes, D.K. "Satisfactions Derived From Leisure Time Pursuits: An Exploratory Nationwide Survey." *Journal of Leisure Research.* 10:4:247-264, 1978.

Hendee, J.C. "Rural Urban Differences Reflected In Outdoor

Recreation." *Journal of Leisure Research*. 1:333-340, 1969.

Hendriks, J. "Leisure Participation As Influenced By Urban Residence Patterns." *Sociology and Social Research*. 55:4:414-428, 1971.

Hobart,C. "Active Sports Participation Among The Young, The Middle Aged , and The Elderly." paper presented to C.S.A.A. meeting in Toronto, Aug.,1974.

Jensen, C. *Leisure and Recreation: Introduction and Overview.*, Philadelphia: Lea and Febiger, 1977.

Kaufman, W. and Scott Greer. "Community, An Application of Social Area Analysis." *Social Forces*. 38:3:196-204, 1960.

Kelly, J.R. "Family Leisure in Three Communities." *Journal of Leisure Research*. 10:1:47-60, 1978.

Kelly, J.R. "Leisure and Quality:Beyond The Quantitative Barrier in Research." T. Goodale and P. DeWitt (eds). *Recreation and Leisure:Issues In An Era of Change*. State College, P.A.:Venture Publishing, 1980

Kenyon, G.S. "The Significance of Physical Activity as a

Function of Age, Sex, Education and Socio-Economic Status of Nothern U.S. Adults." *International Review of Sport Sociology*. 1:41-54, 1966.

Kirk, R.E. *Experimental Design: Procedures For The Social Sciences*. Belmont, California: Wadsworth Publishing Company, Inc.,1968.

Knopp, T.B. "Environmental Determinants of Recreation Behavior." *Journal of Leisure Research*. 4:129-137, Spring, 1972.

Kraus, R.G.. *Recreation and Leisure in Modern Society. 2nd ed*. Santa Monica:Goodyear Publishing Co. 1978.

Kraus, R.G. and J.E. Curtis. *Creative Administration in Recreation and Parks*. St. Louis:C.V. Mosby and Co., 1977.

Lowery, G. and J. E. Curtis. "Satisfying Leisure Needs." S.G. Lutzin and T. S. Story (eds.). *Managing Municipal Resources*. Washington, International City Management Assoc., 1973.

Lundberg, G., M. Komorovsky, and M.A. McInerney. "The Amount and Uses of Leisure." E. Larrabee and R. Meyersohn (eds.). *Mass Leisure.* 20 Glencoe Illinois: Free Press, 1958.

Marascuilo, L.A., and M. McSweeney. *Non Parametric and Distribution-Free Methods For The Social Sciences.* Monteray, California: Brooks/Cole Publishing Company, 1977.

Mankin, Don. *Towards a Post Industrial Psychology.* New York:John Wiley and Sons, 1978.

McIntosh, Peter. *Sport in Society.* London:C.A. Watts & Co., 1968.

Michelson, William. "Discretionary and Non Discretionary Aspects of Activity and Social Contact in Residential Selection." *Society and Leisure.* 5:3:29-53, 1973.

Murphy, J.F. *Recreation and Leisure Service:A Humanistic Perspective.* Duberque, Iowa: Wm. C. Brown Co., 1975.

Nie, N.H. and others. *Statistical Package For The Social Sciences.* 2d ed. Toronto: McGraw-Hill, Inc., 1975.

City of Edmonton, Parks and Recreation, Research and Planning. *Initial Report on The 1980 Leisure Survey.* Edmonton, 1981.

Roberts, K. "The Society of Leisure:Myth or Reality." *Society and Leisure.* 1:1:33-53, 1978.

Robinson,J.."Time Expenditures on Sports Across 10 Countries."*International Review Of Sport Sociology.* 2:67-84, 1967.

Rogers, Brian. "Sport In Its Social Context:International Comparisons", *Rationalizing Sport Policies."* Council of Europe Committee on Sport, Strasbourg, 1977.

Romsa, Gerald and Wayne Hoffman. "An Application of Non-Participation Data In Recreation Research: Testing The Opportunity Theory." *Journal of Leisure Research.* 12:4:321-328, 1980.

Shevsky, E. and M. Williams. *The Social Areas of Los Angeles.* Berkley at Los Angeles:The University of California Press, 1948.

Shivers, J.S. *Principles and Practices of Recreation Service.* New York: The MacMillan Co., 1967.

Sillitoe, K.K. *Planning For Leisure.*London: Her Magesty's Stationary Office, 1969.

Smith, Stephen L.J. "Intervening Opportunities and Travel To Urban Recreation Centres." *Journal of Leisure Research*. 12:4:296-308, 1980.

Snyder, E. and E. Spreitzer. "Lifelong Involvement In Sport as A Leisure Pursuit: Aspects of Role Construction." *Quest*. 31:1:57-70, 1979.

Statistics Cananda. *Recreation Activities of Canadians*. Ottawa: The Queen's Printer, November, 1978.

Toogood, R. "A Survey of Recreational Interests and Pursuits of College Women." *Research Quarterly*. 10:90-100, October, 1939.

White, Clyde R. "Social Class Differences in the Uses of Leisure." E. Larrabee and R. Meyersohn (eds.). *Mass Leisure*. 20 Glencoe Illinois: Free Press, 1958.

White, T.H.. "The Relative Importance of Education and Income as Predictors in Outdoor Recreation

Participation." *Journal of Leisure Recearch.* 7:3:191-199, 1975.

Yoesting,D.R. and J.E. Christensen. "Re-examining The Significance of Childhood Recreation Patterns On Adult Leisure Behavior."*Leisure Services.* 1:3:219-229, 1978.

APPENDICES

1. A: 1980 Leisure Survey Questionnaire

2. B: Tables Establishing Representativeness of Survey

3. C: Data Analysis

APPENDIX A: 1980 LEISURE SURVEY QUESTIONNAIRE

1980 Leisure Survey

THE CITY OF
Edmonton
PARKS AND
RECREATION

SECTION I Passive Leisure Activities

Please answer the following questions about your participation in less active and spectator type leisure activities.

1.
Please indicate whether or not you have participated in any of the following leisure activities in The Last Month.

Check "Yes" or "No" for each activity. *For those activities marked "Yes" answer Question 2.*

2.
How many hours in a Typical Week during the last month did you spend doing each activity marked "Yes" in Question 1.

Number of hours spent in a typical week

	NO	YES	Less than 3	3-7	8-14	15-29	30 or more
Watching T.V.	☐	☐	☐	☐	☐	☐	☐
Listening to the radio	☐	☐	☐	☐	☐	☐	☐
Listening to records, tapes or cassettes	☐	☐	☐	☐	☐	☐	☐
Reading books for leisure	☐	☐	☐	☐	☐	☐	☐
Reading newspapers, magazines for leisure	☐	☐	☐	☐	☐	☐	☐
Socializing or visiting with friends or relatives	☐	☐	☐	☐	☐	☐	☐
Landscaping/gardening/home repairs	☐	☐	☐	☐	☐	☐	☐
Playing bingo, cards, chess or other games	☐	☐	☐	☐	☐	☐	☐
Dancing (social)	☐	☐	☐	☐	☐	☐	☐
Going to pubs, lounges, taverns, etc. with friends	☐	☐	☐	☐	☐	☐	☐
FOR OFFICE USE ONLY	1		2	3	4	5	6

3.
Please indicate whether or not you have participated in any of the following leisure activities Within The Last 12 Months.

Check "Yes" or "No" for each activity. *For those activities marked "Yes" answer Question 4.*

4.
How many times Within The Last 12 Months did you attend each activity marked "Yes" in Question 3?

Times in last year

	NO	YES	Less than 5	6-10	11-20	Over 20
A movie or other film	☐	☐	☐	☐	☐	☐
Popular music performance	☐	☐	☐	☐	☐	☐
Classical music performance or opera	☐	☐	☐	☐	☐	☐
A sports event as a spectator	☐	☐	☐	☐	☐	☐
A cultural centre (museum, art gallery, etc.)	☐	☐	☐	☐	☐	☐
A live theatre production, a ballet or other dance	☐	☐	☐	☐	☐	☐
A zoo, exhibition or circus	☐	☐	☐	☐	☐	☐
A cultural festival or arts and crafts fair	☐	☐	☐	☐	☐	☐
FOR OFFICE USE ONLY	1		2	3	4	5

SECTION II Outdoor Recreation

Please answer the following questions about your participation in recreation activities that take place out of doors. *If you participate in any Outdoor Recreation activity not listed in Question 6, please include it in the Other (specify) category.*

5. Have you participated in any Outdoor Recreation activities WITHIN THE LAST 12 MONTHS? ☐ Yes↓ ☐ No → Go To Question 10.

6. Please indicate whether or not you have participated in any of the following Outdoor Recreation activities in The Last 12 Months.

Check "Yes" or "No" for each activity. *For those activities marked "Yes" answer Questions 7 and 8.*

7. How many times In The Last 12 Months did you engage in each activity marked "Yes" in Question 6.

Times in Last Year

8. Please indicate the type of area you used MOST OFTEN for each activity marked "Yes" in Question 6.

Check one only for each activity

	NO	YES	1-10	11-20	21-30	over 30	Major City Park	Provincial or National Park or Campground	Privately Owned Land or Area	Neighbourhood Park/School Ground	Public Land or Area	Other
Boating	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Picnicking	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Downhill Skiing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Camping	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tobogganing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Canoeing/Kayaking	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Trail Walking/Hiking	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Walking for Pleasure	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Snowshoeing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Bicycling	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Cross Country Skiing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Nature Study	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fishing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (specify)________	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

↑

NOTE: If you engaged in an Outdoor Recreation activity not listed above, please include it in the Other (specify) category.
If you participated in more than one activity not listed above, please list the one you did most often.

☐☐ FOR OFFICE USE ONLY 1 2 3 4 5 1 2 3 4 5 6

Outdoor Recreation *(Cont'd)*

9. There are many reasons why people engage in Outdoor Recreation activities. How important are each of the following to you?

(Circle one number for each reason)

	Of no importance		Of some importance		Of great importance
A chance to be with friends	1	2	3	4	5
For the release of tension (relax, unwind, etc.)	1	2	3	4	5
As a challenge to my abilities	1	2	3	4	5
For pleasure and/or excitement	1	2	3	4	5
It gives me a feeling of accomplishment	1	2	3	4	5
To compete with others	1	2	3	4	5
For personal health and fitness	1	2	3	4	5
A chance to spend time with my family	1	2	3	4	5
A chance to learn a new skill	1	2	3	4	5

10. Are there any Outdoor Recreation activities in which You Don't Participate but would like to start?

☐ Yes↓ ☐ No → Go To Question 12.

Please specify the 3 activities you would like to start most, in order of preference.

(print name of 1st activity)

(print name of 2nd activity)

(print name of 3rd activity)

OFFICE USE ONLY
☐☐
☐☐
☐☐

11. Of the activities listed in Question 10, which are you most likely to start doing in the next 6 months?

(Check one or more of the following)

☐ 1st
☐ 2nd
☐ 3rd
☐ None

OFFICE USE ONLY
☐☐
☐☐
☐☐
☐☐

12. According to your own experience, how important are each of the following factors in reducing your participation in Outdoor Recreation activities?

(Circle one number for each factor)

	Of no importance		Of some importance		Of great importance
I don't have any/enough information about where/when I could participate	1	2	3	4	5
I'm not at ease in social situations	1	2	3	4	5
Feel too much daily stress to participate	1	2	3	4	5
Don't have enough free time due to work, school, etc.	1	2	3	4	5
It is difficult to keep commitments	1	2	3	4	5
It costs too much to participate	1	2	3	4	5
I don't know how to do it well enough	1	2	3	4	5
It is difficult to find others to do things with	1	2	3	4	5
Too many family obligations	1	2	3	4	5
Programs/courses/facilities are not available	1	2	3	4	5
It is difficult to get to where the facility/program is located	1	2	3	4	5

SECTION III Active Sports/Athletics

Please answer the following questions about your participation in active sport, athletic and exercise activities. *If there is an Active Sport/Athletics activity in which you participated that is not listed below, please include it in the Other (specify) category of Question 14.*

13. Have you participated in any Active Sport/Athletics activities WITHIN THE LAST 12 MONTHS? ☐ Yes↓ ☐ No → Go To Question 18.

14. Please indicate whether or not you have participated in any of the following Active Sport/Athletics activities in The Last 12 Months.

Check "Yes" or "No" for each activity. *For those activities marked "Yes" answer Questions 15 and 16.*

15. How many times In The Last 12 Months did you engage in each activity marked "Yes" in Question 14.

16. Please indicate the type of area you used MOST OFTEN for each activity marked "Yes" in Question 14.

Check one only for each activity

	14.		15. Times in Last Year				16.					
	NO	YES	1-10	11-20	21-30	over 30	Private or Commercial (e.g. Y.M.C.A.)	Neighbourhood Park/Community League	Other Public Recreation Facility (e.g. pool)	Educational Institution	Major City Park (e.g. Hawrelak Park)	Other
Squash/Racquetball/Handball	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Badminton	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Soccer	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tennis	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Jogging/Running	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ice Skating	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Volleyball	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Golf	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ice Hockey	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Callisthenics/Exercises	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Football	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alley Bowling	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Weightlifting/Weight Training	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Yoga	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Softball/Baseball	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Basketball	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Curling	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Rugby	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Swimming	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (specify)________ ↑	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

NOTE: If you engaged in any Active Sport/Athletics activity not listed above, please include it in the Other (specify) category.
If you participated in more than one activity not listed above, please list the one you did most often.

☐☐ FOR OFFICE USE ONLY	1		2	3	4	5	1	2	3	4	5	6

Active Sports/Athletics *(Cont'd)*

17. People participate in Active Sport/Athletics activities for many reasons. How important are each of the following to you?

(Circle one number for each reason)

	Of no importance		Of some importance		Of great importance
A chance to be with friends	1	2	3	4	5
For the release of tension (relax, unwind, etc.)	1	2	3	4	5
As a challenge to my abilities	1	2	3	4	5
For pleasure and/or excitement	1	2	3	4	5
It gives me a feeling of accomplishment	1	2	3	4	5
To compete with others	1	2	3	4	5
For personal health and fitness	1	2	3	4	5
A chance to spend time with my family	1	2	3	4	5
A chance to learn a new skill	1	2	3	4	5

18. Are there any Active Sport/Athletics activities in which You Don't Participate but would like to start?

☐ Yes↓ ☐ No → Go to Question 20.

Please specify the 3 activities you would like to start most, in order of preference.

____
(print name of 1st activity)

____
(print name of 2nd activity)

____
(print name of 3rd activity)

OFFICE USE ONLY
☐☐
☐☐
☐☐

19. Of the activities listed in Question 18, which are you most likely to start doing in the next 6 months?

(Check one or more of the following)

☐ 1st
☐ 2nd
☐ 3rd
☐ None

OFFICE USE ONLY
☐☐
☐☐
☐☐
☐☐

20. According to your own experience, how important are each of the following factors in reducing you participation in Active Sport/Athletics activities?
(Circle one number for each factor)

	Of no importance		Of some importance		Of great importance
I don't have any/enough information about where/when I could participate	1	2	3	4	5
I'm not at ease in social situations	1	2	3	4	5
Feel too much daily stress to participate	1	2	3	4	5
Don't have enough free time due to work, school, etc.	1	2	3	4	5
It is difficult to keep commitments	1	2	3	4	5
It costs too much to participate	1	2	3	4	5
I don't know how to do it well enough	1	2	3	4	5
It is difficult to find others to do things with	1	2	3	4	5
Too many family obligations	1	2	3	4	5
Programs/courses/facilities are not available	1	2	3	4	5
It is difficult to get to where the facility/program is located	1	2	3	4	5

SECTION IV Arts and Cultural

Please answer the following questions about your participation in arts, crafts, hobbies, and cultural activities. *If you participated in any Arts and Cultural activity which is not listed in Question 22, please include it in the Other (specify) category.*

21. Have you participated in any Arts and Cultural activities WITHIN THE LAST 12 MONTHS?

☐ Yes↓ ☐ No → Go To Question 26.

22.
Please indicate whether or not you have participated in any of the following Arts and Cultural activities in The Last 12 Months.

Check "Yes" or "No" for each activity. *For those activities marked "Yes" answer Questions 23 and 24.*

23.
How many times In The Last 12 Months did you engage in each activity marked "Yes" in Question 22.

Times in Last Year

24.
Please indicate the type of facility used MOST OFTEN for each activity marked "Yes" in Question 22.

Check one only for each activity

	NO	YES	1-10	11-20	21-30	over 30	Educational Institution	Community League Facility	Commercial Facility/ Private Club	Public Recreation Facility	Home	Other
Music (play or sing)	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Needlecrafts (sewing, knitting)	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Painting/Sculpture (any media)	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Graphic Arts	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Woodworking/Carving	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Photography	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Drawing/Sketching	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Creative Writing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dance (jazz, ballet, etc.)	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Drama	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Weaving/Spinning	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Batik/Textile dyeing or printing	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ceramics/Pottery	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (specify)______	☐↓	☐→	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

↑

NOTE: If you engaged in any Arts and Cultural activity not listed above, please include it in the Other (specify) category.
If you participated in more than one activity not listed above, please list the one you did most often.

☐☐ FOR OFFICE USE ONLY	1		2	3	4	5	1	2	3	4	5	6

Arts and Cultural *(Cont'd)*

25. People participate in Arts and Cultural activities for many reasons. How important are each of the following to you?
(Circle one number for each reason)

	Of no importance		Of some importance		Of great importance
A chance to be with friends	1	2	3	4	5
For the release of tension (relax, unwind, etc.)	1	2	3	4	5
As a challenge to my abilities	1	2	3	4	5
For pleasure and/or excitement	1	2	3	4	5
It gives me a feeling of accomplishment	1	2	3	4	5
A chance to spend time with my family	1	2	3	4	5
A chance to learn a new skill	1	2	3	4	5

26. Are there any Arts and Cultural activities in which You Don't Participate but would like to start?

☐ Yes↓ ☐ No → Go to Question 28.

Please specify the 3 activities you would like to start most, in order of preference.

OFFICE USE ONLY
☐☐
☐☐
☐☐
☐☐

____
(print name of 1st activity)

____
(print name of 2nd activity)

____
(print name of 3rd activity)

27. Of the activities listed in Question 26, which are you most likely to start doing in the next 6 months?

(Check one or more of the following)

☐ 1st
☐ 2nd
☐ 3rd
☐ None

OFFICE USE ONLY
☐☐
☐☐
☐☐
☐☐

28. According to your experience, how important are each of the following factors in reducing your participation in Arts and Cultural activities?
(Circle one number for each factor)

	Of no importance		Of some importance		Of great importance
I don't have any/enough information about where/when I could participate	1	2	3	4	5
I'm not at ease in social situations	1	2	3	4	5
Feel too much daily stress to participate	1	2	3	4	5
Don't have enough free time due to work, school, etc.	1	2	3	4	5
It is difficult to keep commitments	1	2	3	4	5
it costs too much to participate	1	2	3	4	5
I don't know how to do it well enough	1	2	3	4	5
It is difficult to find others to do things with	1	2	3	4	5
Too many family obligations	1	2	3	4	5
Programs/courses/facilities are not available	1	2	3	4	5
It is difficult to get to where the facility/program is located	1	2	3	4	5

SECTION V Edmonton Facilities

Please answer the following questions about your use of specific Edmonton facilities.

29.
Did you use or attend any of the following Edmonton facilities WITHIN THE LAST 12 MONTHS?

Check "Yes" or "No" for each facility. *For those facilities marked "Yes" answer Question 30.*

30.
For each facility marked "Yes" in Question 29, how often did you use it In The Last 12 Months.

Times in Last Year

	NO	YES	Less than 5	6-10	11-20	Over 20
The Coliseum	☐↓	☐→	☐	☐	☐	☐
Valley Zoo	☐↓	☐→	☐	☐	☐	☐
Fort Edmonton	☐↓	☐→	☐	☐	☐	☐
Commonwealth Stadium	☐↓	☐→	☐	☐	☐	☐
Kinsmen Centre	☐↓	☐→	☐	☐	☐	☐
John Walter Museum	☐↓	☐→	☐	☐	☐	☐
Planetarium	☐↓	☐→	☐	☐	☐	☐
John Janzen Nature Centre	☐↓	☐→	☐	☐	☐	☐
Jubilee Auditorium	☐↓	☐→	☐	☐	☐	☐
Renfrew Park	☐↓	☐→	☐	☐	☐	☐
Muttart Conservatory	☐↓	☐→	☐	☐	☐	☐
Edmonton Art Gallery	☐↓	☐→	☐	☐	☐	☐
Citadel Theatre	☐↓	☐→	☐	☐	☐	☐
Theatre 3	☐↓	☐→	☐	☐	☐	☐
Provincial Museum and Archives	☐↓	☐→	☐	☐	☐	☐
Capital City Recreation Park	☐↓	☐→	☐	☐	☐	☐

FOR OFFICE USE ONLY	1		2	3	4	5

Section VI Your Opinion of Recreation Services

Please answer the following questions which ask for your opinion about the way that recreation services are made available in Edmonton. (Please circle the one number that best describes your opinion of each of the following statements.)

***Note: Where a question mentions Parks and Recreation, it refers to the City of Edmonton Parks and Recreation Department.**

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
31.	I prefer to visit city parks such as Hawrelak Park and Kinsmen Park more than local neighbourhood parks.	1	2	3	4	5
32.	Community leagues and organizations should become more involved in providing their own recreation opportunities.	1	2	3	4	5
33.	The main role of Parks and Recreation should be that of helping other groups and agencies to provide recreation opportunities.	1	2	3	4	5
34.	The development of local neighbourhood parks should receive a greater emphasis than the building of city level facilities.	1	2	3	4	5
35.	One of the major problems with recreation today is that there is too much emphasis placed on courses, programs and instruction, and too little on just being involved.	1	2	3	4	5
36.	The amount of the fee charged by Parks and Recreation has stopped me from participating in some recreation activities.	1	2	3	4	5
37.	Parks and Recreation should concentrate mainly on providing recreation programs, courses and opportunities for the citizens of Edmonton.	1	2	3	4	5
38.	Tax dollars should be used to support recreation programs and to lower the fees charged to users.	1	2	3	4	5
39.	Parks and Recreation should continue its policy of having the public participate in the planning of programs, facilities, and open spaces.	1	2	3	4	5
40.	The services provided by Parks and Recreation should encourage family members to participate together as a unit.	1	2	3	4	5

Section VII About You Personally

The following questions will be useful in grouping your replies with those of the other respondents in the survey. This information will greatly assist Parks and Recreation in meeting your recreation needs. All answers will be treated as confidential.

41. How old are you? ☐☐

42. Are you ☐ male; ☐ female.

43. What is your marital status?
☐ single; ☐ married; ☐ divorced or separated; ☐ widowed; ☐ other.

44. How long have you lived at your present address?
☐ less than one year; ☐ 1-3 years; ☐ 4-5 years; ☐ more than 5 years.

45. How long have you lived in Edmonton?
☐ less than one year; ☐ 1-3 years; ☐ 4-5 years; ☐ more than 5 years.

46. Please indicate which of the following BEST describes your employment status over THE PAST 12 MONTHS.
(Check the one best answer)
☐ student;
☐ homemaker;
☐ employed part-time;
☐ retired;
☐ employed full-time;
☐ unemployed;
☐ other.

47. Please indicate your present level of Education.
(Check one answer)
☐ 0-6 years;
☐ 7-9 years;
☐ some high school;
☐ high school graduation;
☐ post-secondary certificate or diploma;
☐ some university;
☐ university degree.

APPENDIX B: REPRESENTATIVENESS OF THE SURVEY

Table 1.0 Comparison of Sex Distributions

	Distributions - Percent of Respective Populations	
	1980 Survey	1979 Census
MALE	47.1	50.4
FEMALE	51.0	49.6

Table 1.1 Comparison of Age Distribution

	Distributions - Percent of Respective Populations	
	1980 Survey	1979 Census
14 - 19	14.8	11.4
20 - 29	32.7	33.2
30 - 39	18.6	18.1
40 - 49	13.8	12.9
50 - 59	11.1	11.3
60 - 64	3.8	4.0
65+	5.2	9.2*

NOTE: The asterisk (*) denotes that these population segments are not representative based on the 95.0% confidence level and 10.0% error bound used in the sample selection.

Table 1.2 Comparison of Marital Status Distributions

	Distributions - Percent of Respective Populations	
	1980 Survey	1979 Census
Single	33.3	35.9
Married	52.2	53.8
Divorced/Separated	7.7	5.0
Widowed	3.1	4.7*
Other	2.2	0.5

NOTE: The asterisk (*) denotes that these population segments are not representative based on the 95.0% confidence level and 10.0% error bound used in the sample selection.

Table 1.3 Comparison of Occupation Distributions

	Distributions - Percent of Respective Populations	
	1980 Survey	1979 Census
Student	16.6	13.6
Homemaker	13.3	14.6
Employed Part-time	8.7	5.4
Retired	5.6	7.5*
Employed Full-time	51.1	55.5
Unemployed	0.8	2.6*
Other	1.8	0.8

NOTE: The asterisk (*) denotes that these population segments are not representative based on the 95.0% confidence level and 10.0% error bound used in the sample selection.

Leaf 117 omitted in page numbering

APPENDIX C: DATA ANALYSIS

POST HOC ANALYSIS: PROPORTIONAL TABLES

General Process: Calculate confidence intervals around the estimate of the compared proportions.

$$\hat{\psi}_k \pm \sqrt{\chi^2_{k-1:1-\alpha}} \left(\sqrt{\frac{p_k q_k}{N_k} + \frac{p_{k'} q_{k'}}{N_{k'}}} \right)$$

χ^2 is taken from the S.P.S.S. caculations (see tables immediately preceeding each set of paired comparison data).

$$\hat{\psi} = p_k - p_{k'}$$

Decision Point: If the confidence interval does not embrace zero, the proportions are said to be different.

Source: Marascuilo, L.A. and M. McSweeney, Nonparametric and Distribution Free Methods for The Social Sciences, Monteray, Cal.: Brooks/Cole Publishing, 1977.

OUTDOOR RECREATION

```
UPDATE 17 PARTICIPATION VARIABLES PLUS CROSSTABS                           06/03/81        PAGE    3

FILE    RUN1      (CREATION DATE = 05/21/81)

* * * * * * * * * * * * * * * * * * * *   C R O S S T A B U L A T I O N   O F   * * * * * * * * * * * * * * * * * * * *
*    WEIGHTYP                                                        BY  ORECPAR
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

                      ORECPAR
            COUNT   I
            ROW PCT IND          YES         ROW
            COL PCT I                        TOTAL
            TOT PCT I       1  I       2  I
WEIGHTYP    --------I----------I----------I
                1   I      19  I     183  I    202
                    I     9.4  I    90.6  I    9.1
                    I    10.2  I     9.0  I
                    I     0.9  I     8.2  I
                   -I----------I----------I
                2   I      60  I     402  I    462
                    I    13.0  I    87.0  I   20.8
                    I    32.1  I    19.7  I
                    I     2.7  I    18.1  I
                   -I----------I----------I
                3   I      43  I     418  I    461
                    I     9.3  I    90.7  I   20.7
                    I    23.0  I    20.5  I
                    I     1.9  I    18.8  I
                   -I----------I----------I
                4   I      30  I     325  I    355
                    I     8.5  I    91.5  I   16.0
                    I    16.0  I    15.9  I
                    I     1.3  I    14.6  I
                   -I----------I----------I
                5   I       9  I     256  I    265
                    I     3.4  I    96.6  I   11.9
                    I     4.8  I    12.6  I
                    I     0.4  I    11.5  I
                   -I----------I----------I
                6   I      26  I     455  I    481
                    I     5.4  I    94.6  I   21.6
                    I    13.9  I    22.3  I
                    I     1.2  I    20.4  I
                   -I----------I----------I
           COLUMN         187       2039      2226
            TOTAL         8.4       91.6     100.0

RAW CHI SQUARE =    27.84278 WITH     5 DEGREES OF FREEDOM   SIGNIFICANCE =  0.0000
LAMBDA (ASYMMETRIC) =  0.01846 WITH WEIGHTYP DEPENDENT            =  0.0     WITH ORECPAR  DEPENDENT
LAMBDA (SYMMETRIC) =  0.01780
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =  0.00373 WITH WEIGHTYP DEPENDENT          =  0.02260 WITH ORECPAR  DEPENDENT
UNCERTAINTY COEFFICIENT (SYMMETRIC) =  0.00640
ETA =  0.08311 WITH WEIGHTYP DEPENDENT          =  0.11146 WITH ORECPAR  DEPENDENT
```

POST HOC ANALYSIS: PROPORTIONAL TABLES
Outdoor Recreation

contrast	estimate Ψ	$SE^2 = \left(\frac{p_k q_k}{N_k} + \frac{p_{k'} q_{k'}}{N_{k'}}\right)$	$\sqrt{SE^2} \times \sqrt{\chi^2}$	upper limit	lower limit
$p_1 - p_2$	.036	.0258147	.08596	.1219	-.0499
$p_1 - p_3$	-.001	.0245886	.08188	.08088	-.08288
$p_1 - p_4$	-.009	.0253121	.084289	.07529	-.09329
$p_1 - p_5$	-.06	.0233559	.077775	.01775	-.13775
$p_1 - p_6$	-.04	.022973	.076503	.0365	-.1165
$p_2 - p_3$	-.037	.020683	.068875	.0319	-.1059
$p_2 - p_4$	-.045	.0215821	.071692	.0267	-.1167
$p_2 - p_5$	-.096	.0192016	.063941	-.0321	-.1599*
$p_2 - p_6$	-.076	.018735	.062388	-.0136	-.1384*
$p_3 - p_4$	-.008	.0200524	.066775	.0588	-.0748
$p_3 - p_5$	-.059	.0175186	.058336	.0007	-.1173
$p_3 - p_6$	-.039	.0170059	.056629	.0176	-.0956
$p_4 - p_5$	-.051	.0183246	.061021	.01	-.112
$p_4 - p_6$	-.031	.018036	.06006	.029	-.091
$p_5 - p_6$	.02	.015165	.050513	.0705	-.0305

Neighborhood Type	ONE	TWO	THREE	FOUR	FIVE	SIX
Total Respondants (N)	202	462	461	355	265	481
% Participating (p)	.906	.870	.907	.915	.966	.946
% Not Participating (q)	.094	.130	.093	.085	.034	.054
$\frac{pq}{N}$	.0004216	.0002448	.000183	.0002191	.0001239	.0001062

* Indicates a significant difference in proportions

SPORTS/ATHLETICS

SPORTS/ATHLETICS

```
UPDATE IF PARTICIPATION VARIABLES PLUS CROSSTABS                          06/02/81          PAGE    5
FILE    RUN1       (CREATION DATE = 06/21/81)
* * * * * * * * * * * * * * * * * *   C R O S S T A B U L A T I O N   O F   * * * * * * * * * * * * * * * * * *
    WEIGHTYP                                                  BY  SPORTPAR
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   PAGE  1 OF  1

                      SPORTPAR
              COUNT  I
              ROW PCT IND       YES          ROW
              COL PCT I                      TOTAL
              TOT PCT I     1  I     2  I
WEIGHTYP      --------I--------I--------I
                 1    I    53  I   145  I    198
                      I  26.8  I  73.2  I    9.0
                      I  10.2  I   8.6  I
                      I   2.4  I   6.6  I
                     -I--------I--------I
                 2    I   145  I   309  I    454
                      I  31.9  I  68.1  I   20.7
                      I  27.9  I  18.4  I
                      I   6.6  I  14.1  I
                     -I--------I--------I
                 3    I   122  I   331  I    453
                      I  26.9  I  73.1  I   20.6
                      I  23.5  I  19.7  I
                      I   5.6  I  15.1  I
                     -I--------I--------I
                 4    I    77  I   279  I    356
                      I  21.6  I  78.4  I   16.2
                      I  14.8  I  16.6  I
                      I   3.5  I  12.7  I
                     -I--------I--------I
                 5    I    38  I   224  I    262
                      I  14.5  I  85.5  I   11.9
                      I   7.3  I  13.3  I
                      I   1.7  I  10.2  I
                     -I--------I--------I
                 6    I    84  I   390  I    474
                      I  17.7  I  82.3  I   21.6
                      I  16.2  I  23.2  I
                      I   3.8  I  17.8  I
                     -I--------I--------I
              COLUMN      519      1678      2197
               TOTAL     23.6      76.4     100.0

RAW CHI SQUARE =     43.34181 WITH     5 DEGREES OF FREEDOM   SIGNIFICANCE =  0.0000
LAMBDA (ASYMMETRIC) =  0.03640 WITH WEIGHTYP DEPENDENT          =  0.0      WITH SPORTPAR DEPENDENT
LAMBDA (SYMMETRIC) =  0.02721
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =  0.00573 WITH WEIGHTYP DEPENDENT            =  0.01830 WITH SPORTPAR DEPENDENT
UNCERTAINTY COEFFICIENT (SYMMETRIC) =  0.00873
ETA =  0.12301 WITH WEIGHTYP DEPENDENT           =  0.14031 WITH SPORTPAR DEPENDENT
```

POST HOC ANALYSIS: PROPORTIONAL TABLES

Sports/Athletics

contrast $p_k - p_{k'}$	estimate Ψ	$SE^2 = \frac{p_k q_k}{N_k} + \frac{p_k q_{k'}}{N_{k'}}$	$\sqrt{SE^2} \times \sqrt{\chi^2}$	upper limit	lower limit
$p_1 - p_2$	.051	.0383314	.1276	.1786	-.0766
$p_1 - p_2$	.001	.030293	.1009	.1019	-..0991
$p_1 - p_4$	-.052	.038290	.1275	.0755	-.1795
$p_1 - p_5$	-.123	.038262	.1274	.0044	-.2504
$p_1 - p_6$	-.091	.036029	.1199	.0289	-.2109
$p_2 - p_3$	-.05	.030209	.1006	.0506	-.1506
$p_2 - p_4$	-.103	.030890	.1029	-.0001	-.2059*
$p_2 - p_5$	-.174	.030849	.1027	-.0713	-.2767*
$p_2 - p_6$	-.142	.028032	.0933	-.0487	-.2353*
$p_3 - p_4$	-.053	.030160	.1004	.0474	-.1534
$p_3 - p_5$	-.124	.027982	.0931	-.0309	-.2171*
$p_3 - p_6$	-.092	.027229	.0907	-.0013	-.1527*
$p_4 - p_5$	-.071	.027937	.0930	.0220	-.1640
$p_4 - p_6$	-.039	.027980	.0918	.0528	-.1308
$p_5 - p_6$	.032	.027940	.0930	.1250	-.0610

*** Indicates a significant difference in proportions**

Neighborhood Type	ONE	TWO	THREE	FOUR	FIVE	SIX
Total Respondents (N)	198	454	453	356	262	474
% Participating (p)	.732	.681	.731	.784	.855	.823
% Not Participating (q)	.268	.319	.269	.216	.145	.177
$\frac{pq}{N}$	.0009908	.0004785	.0004341	.0004757	.0004732	.0003073

ARTS AND CULTURAL

ARTS AND CULTURAL

```
UPDATE IF PARTICIPATION VARIABLES PLUS CROSSTABS                      05/02/81        PAGE    7
FILE   RUN1     (CREATION DATE = 05/21/81)

* * * * * * * * * * * * * * * * *  C R O S S T A B U L A T I O N   O F  * * * * * * * * * * * * * * * * * *
     NEIGHTYP                                                 BY  ARCRPAR
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * PAGE  1 OF  1

                        ARCRPAR
              COUNT   I
             ROW PCT  INO         YES          ROW
             COL PCT  I                        TOTAL
             TOT PCT  I     1   I     2   I
NEIGHTYP     ---------I---------I---------I
                  1   I    85   I   116   I    201
                      I  42.3   I  57.7   I    9.3
                      I   9.7   I   9.0   I
                      I   3.9   I   5.4   I
                     -I---------I---------I
                  2   I   214   I   235   I    449
                      I  47.7   I  52.3   I   20.8
                      I  24.4   I  18.3   I
                      I   9.9   I  10.9   I
                     -I---------I---------I
                  3   I   193   I   262   I    455
                      I  42.4   I  57.6   I   21.1
                      I  22.0   I  20.4   I
                      I   8.9   I  12.1   I
                     -I---------I---------I
                  4   I   140   I   205   I    345
                      I  40.6   I  59.4   I   16.0
                      I  15.9   I  16.0   I
                      I   6.5   I   9.5   I
                     -I---------I---------I
                  5   I    79   I   173   I    252
                      I  31.3   I  68.7   I   11.7
                      I   9.0   I  13.5   I
                      I   3.7   I   8.0   I
                     -I---------I---------I
                  6   I   167   I   292   I    459
                      I  36.4   I  63.6   I   21.2
                      I  19.0   I  22.8   I
                      I   7.7   I  13.5   I
                     -I---------I---------I
             COLUMN       878      1283       2161
              TOTAL      40.6      59.4      100.0
RAW CHI SQUARE =    22.46495 WITH    5 DEGREES OF FREEDOM.  SIGNIFICANCE =  0.0004
LAMBDA (ASYMMETRIC) =  0.02761 WITH NEIGHTYP DEPENDENT.         =  0.0     WITH ARCRPAR  DEPENDENT
LAMBDA (SYMMETRIC) =  0.01822
UNCERTAINTY COEFFICIENT (ASYMMETRIC) =  0.00300 WITH NEIGHTYP DEPENDENT.          =  0.00776 WITH ARCRPAR  DEPENDENT
UNCERTAINTY COEFFICIENT (SYMMETRIC) =  0.00433
ETA =  0.08215 WITH NEIGHTYP DEPENDENT          =  0.10186 WITH ARCRPAR  DEPENDENT
```

POST HOC ANALYSIS: PROPORTIONAL TABLES

Arts and Cultural

contrast $p_k - p_{k'}$	estimate Ψ	$SE^2 = \frac{p_k q_k}{N_k} + \frac{p_k q_{k'}}{N_{k'}}$	$\sqrt{SE^2} \times \sqrt{\chi^2}$	upper limit	lower limit
$p_1 - p_2$	.054	.04207	.1401	.1941	-.0861
$p_1 - p_2$	.001	.04185	.1393	.1403	-.1383
$p_1 - p_4$	-.017	.04370	.1457	.1287	-.1627
$p_1 - p_5$	-.110	.04547	.1514	.0414	-.2614
$p_1 - p_6$	-.059	.04145	.1381	.0791	-.1971
$p_2 - p_3$	-.053	.03306	.1101	.0571	-.1631
$p_2 - p_4$	-.071	.03540	.1179	.0469	-.1889
$p_2 - p_5$	-.164	.03754	.1250	-.0390	-.2890*
$p_2 - p_6$	-.113	.03250	.1084	-.0046	-.2214*
$p_3 - p_4$	-.018	.03515	.1171	.0991	-.1351
$p_3 - p_5$	-.111	.03728	.1241	.0131	-.2351
$p_3 - p_6$	-.060	.03226	.1075	.0475	-.1675
$p_4 - p_5$	-.093	.03939	.1312	.0382	-.2242
$p_4 - p_6$	-.042	.03469	.1155	.0735	-.1575
$p_5 - p_6$	.051	.03685	.1227	.1737	-.0717

* Indicates a significant difference in proportions

Neighborhood Type	ONE	TWO	THREE	FOUR	FIVE	SIX
Total Respondents (N)	201	449	455	345	252	459
% Participating (p)	.577	.523	.576	.594	.687	.636
% Not Participating (q)	.423	.477	.424	.406	.313	.364
$\frac{pq}{N}$	.0012143	.000556	.005368	.000699	.0008533	.0005044

ANALYSIS OF VARIANCE

AND SCHEFFE'S TEST

Leaf 129 omitted in page numbering

NUMBER OF ACTIVITIES ENGAGED IN OUTDOOR RECREATION

```
ONEWAY FOR ACTIVITIES VARIABLES                                              05/28/81        PAGE    3
FILE   RUN1     (CREATION DATE : 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


     VARIABLE  ORACT
  BY VARIABLE  SUBFILE

                                              ANALYSIS OF VARIANCE

               SOURCE              D.F.     SUM OF SQUARES     MEAN SQUARES        F RATIO    F PROB.
        BETWEEN GROUPS                5          213.3746          42.6749          5.088     0.0001
        WITHIN GROUPS              2248        18855.9917           8.3879
        TOTAL                      2253        19069.3663


                                          STANDARD       STANDARD
GROUP        COUNT          MEAN         DEVIATION        ERROR          MINIMUM          MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1          207         4.2512          2.9137         0.2025          0.0            13.0000          3.8519  TO        4.6505
TYPE2          466         4.2575          3.0200         0.1399          0.0            12.0000          3.9826  TO        4.5324
TYPE3          466         4.6202          2.8751         0.1332          0.0            14.0000          4.3585  TO        4.8819
TYPE4          358         4.5870          2.8823         0.1523          0.0            14.0000          4.2875  TO        4.8866
TYPE5          270         5.1889          2.7829         0.1694          0.0            13.0000          4.8554  TO        5.5223
TYPE6          487         4.8912          2.8592         0.1296          0.0            13.0000          4.6366  TO        5.1457

TOTAL         2254         4.6285          2.9093         0.0613          0.0            14.0000          4.5084  TO        4.7487

           FIXED EFFECTS MODEL             2.8962         0.0610                                           4.5088  TO        4.7482

          RANDOM EFFECTS MODEL                            0.1430                                           4.2621  TO        4.9950

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE           0.0924

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.1820, P = 0.616 (APPROX.)
     BARTLETT-BOX F =                              0.550, P = 0.738
     MAXIMUM VARIANCE / MINIMUM VARIANCE =         1.178
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                              05/28/81        PAGE    5
FILE   RUN1     (CREATION DATE : 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


     VARIABLE  ORACT
  BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

           4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       2.0479 * RANGE * SQRT(1/N(I) + 1/N(J))

  (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

                            T T T T T T
                            Y Y Y Y Y Y
                            P P P P P P
                            E E E E E E
                            1 2 4 3 6 5

    MEAN        GROUP

   4.2512       TYPE1
   4.2575       TYPE2
   4.5870       TYPE4
   4.6202       TYPE3
   4.8912       TYPE6         *
   5.1889       TYPE5       * *
```

SPORTS/ATHLETICS

University of A

```
ONEWAY FOR ACTIVITIES VARIABLES                                                  06/26/81        PAGE    6

FILE   RUN1      (CREATION DATE = 06/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


      VARIABLE  SPACT
   BY VARIABLE  SUBFILE

                                              ANALYSIS OF VARIANCE

               SOURCE                  D F      SUM OF SQUARES     MEAN SQUARES          F RATIO    F PROB

         BETWEEN GROUPS                   5           434 7681          86 9536            5 978    0 0000

         WITHIN GROUPS                 2248         32697 5935          14 5452

         TOTAL                         2253         33132 3616



                                           STANDARD        STANDARD
GROUP          COUNT          MEAN        DEVIATION         ERROR          MINIMUM        MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1            207        3 6522          3 6021         0 2504          0 0            20 0000          3 1586   TO          4 1458
TYPE2            466        3 3646          3 7555         0 1740          0 0            16 0000          3 0228   TO          3 7067
TYPE3            466        3 8090          3 8853         0 1800          0 0            16 0000          3 4553   TO          4 1627
TYPE4            358        4 3156          3 9112         0 2067          0 0            16 0000          3 9091   TO          4 7222
TYPE5            270        4 6926 —        3 9313         0 2393          0 0            18 0000          4 2215   TO          5 1636
TYPE6            487        4 2854          3 7479         0 1698          0 0            18 0000          3 9517   TO          4 6191

TOTAL           2254        3 9920          3 8348         0 0808          0 0            20 0000          3 8336   TO          4 1504

              FIXED EFFECTS MODEL           3 8138         0 0803                                          3 8345   TO          4 1495

                RANDOM EFFECTS MODEL                       0 2043                                          3 4668   TO          4 5173

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE            0 1959

TESTS FOR HOMOGENEITY OF VARIANCES

        COCHRANS C = MAX  VARIANCE/SUM(VARIANCES) = 0 1777, P = 0 852 (APPROX )
        BARTLETT-BOX F =                            0 618, P = 0 685
        MAXIMUM VARIANCE / MINIMUM VARIANCE =          1 191
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                  06/26/81        PAGE    7

FILE   RUN1      (CREATION DATE = 06/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


      VARIABLE  SPACT
   BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0 050 LEVEL -

           4 71  4 71  4 71  4 71  4 71

THE RANGES ABOVE ARE TABLE RANGES   THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS
        2 6968 * RANGE * SQRT(1/N(I) + 1/N(J))

  (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0 050 LEVEL

                             T T T T T T
                             Y Y Y Y Y Y
                             P P P P P P
                             E E E E E E
                             2 1 3 6 4 5

    MEAN        GROUP

    3 3646      TYPE2
    3 6522      TYPE1
    3 8090      TYPE3
    4 2854      TYPE6        *
    4 3156      TYPE4        *
    4 6926      TYPE5        *
```

University

ARTS AND CULTURAL

```
ONEWAY FOR ACTIVITIES VARIABLES                                                 05/28/81        PAGE   9
FILE   RUN1      (CREATION DATE : 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  ARACT
    BY VARIABLE  SUBFILE

                                            ANALYSIS OF VARIANCE

                   SOURCE                D.F.      SUM OF SQUARES      MEAN SQUARES         F RATIO    F PROB.

          BETWEEN GROUPS                   5             26.3180             5.2636           1.469     0.1969

          WITHIN GROUPS                 2248           8056.8967             3.5840

          TOTAL                         2263           8083.2148



                                              STANDARD          STANDARD
GROUP          COUNT          MEAN           DEVIATION            ERROR          MINIMUM          MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1            207         1.5942           2.0023            0.1392           0.0            10.0000          1.3196   TO         1.8688
TYPE2            458         1.3541           1.7988            0.0833           0.0            10.0000          1.1903   TO         1.5178
TYPE3            488         1.5322           1.9393            0.0899           0.0            12.0000          1.3555   TO         1.7088
TYPE4            358         1.5223           1.8405            0.0973           0.0             8.0000          1.3310   TO         1.7136
TYPE5            270         1.7259           1.9904            0.1211           0.0            13.0000          1.4874   TO         1.9644
TYPE6            487         1.5667           1.8711            0.0848           0.0            10.0000          1.4001   TO         1.7333

TOTAL           2264         1.5302           1.8941            0.0399           0.0            13.0000          1.4519   TO         1.6084

          FIXED EFFECTS MODEL                 1.8932            0.0399                                          1.4520   TO         1.6084

         RANDOM EFFECTS MODEL                                   0.0481                                          1.4040   TO         1.6563

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE             0.0045

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.1834, P = 0.411 (APPROX.)
     BARTLETT-BOX F =                              1.269, P = 0.275
     MAXIMUM VARIANCE / MINIMUM VARIANCE =         1.239
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                 05/28/81        PAGE  10
FILE   RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  ARACT
    BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

TUKEY-HSD PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.04  4.04  4.04  4.04  4.04

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
      1.3387 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

SIGNIFICANT FREQUENCY MEASURES

OUTDOOR RECREATION: "1-10" TIMES PER YEAR

```
ONEWAY FOR AC[illegible]

FILE    RUN1      (CREATION DATE = 06/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - -

     VARIABLE  ORLOW
  BY VARIABLE  SUBFILE

                                       ANALYSIS OF VARIANCE

            SOURCE              D.F.     SUM OF SQUARES     MEAN SQUARES         F RATIO    F PROB.

        BETWEEN GROUPS             5         103.9865           20.7973          3.756     0.0022

        WITHIN GROUPS           2248       12445.7971            5.5364

        TOTAL                   2253       12549.7813


                                     STANDARD      STANDARD
GROUP        COUNT        MEAN       DEVIATION      ERROR        MINIMUM       MAXIMUM         95 PCT CONF INT FOR MEAN

TYPE1         207        2.5942       2.2381       0.1556        0.0            9.0000         2.2875   TO       2.9009
TYPE2         466        2.7318       2.3660       0.1097        0.0           10.0000         2.5162   TO       2.9473
TYPE3         466        2.8498       2.2735       0.1053        0.0           10.0000         2.6428   TO       3.0567
TYPE4         358        2.9553       2.5134       0.1324        0.0           11.0000         2.6941   TO       3.2165
TYPE5         270        3.0593       2.2278       0.1356        0.0           10.0000         2.7923   TO       3.3262
TYPE6         487        3.2649       2.4057       0.1090        0.0           12.0000         3.0507   TO       3.4791

TOTAL        2254        2.9335       2.3601       0.0497        0.0           12.0000         2.8380   TO       3.0309

          FIXED EFFECTS MODEL        2.3530       0.0496                                       2.8363   TO       3.0306

         RANDOM EFFECTS MODEL                     0.0985                                       2.6777   TO       3.1892

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE          0.0413

TESTS FOR HOMOGENEITY OF VARIANCES

      COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.1923, P = 0.078 (APPROX.)
      BARTLETT-BOX F =                               1.474, P = 0.194
      MAXIMUM VARIANCE / MINIMUM VARIANCE =          1.273
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/02/81         PAGE    4

FILE    RUN1      (CREATION DATE = 06/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - -

     VARIABLE  ORLOW
  BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       1.6638 * RANGE * SQRT(1/N(I) + 1/N(J))

  (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

                           T T T T T T
                           Y Y Y Y Y Y
                           P P P P P P
                           E E E E E E
                           1 2 3 4 5 6

    MEAN       GROUP

   2.5942      TYPE1
   2.7318      TYPE2
   2.8498      TYPE3
   2.9553      TYPE4
   3.0593      TYPE5
   3.2649      TYPE6       * *
```

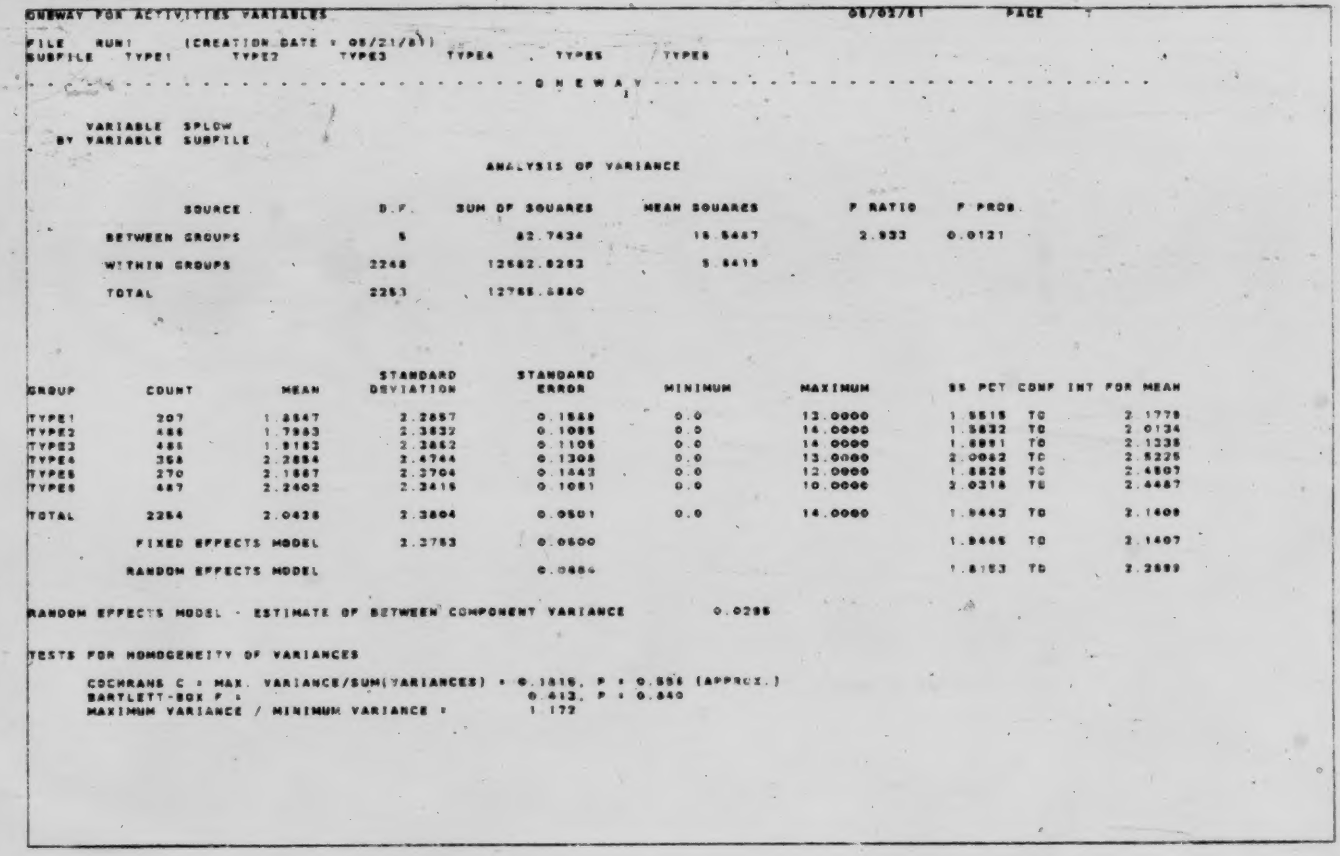
OUTDOOR RECREATION: "11-20" TIMES PER YEAR

```
ONEWAY FOR ACTIVITIES VARIABLES                                                          06/02/81        PAGE    5

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - -


      VARIABLE  ORMED
   BY VARIABLE  SUBFILE

                                              ANALYSIS OF VARIANCE

             SOURCE                   D.F.     SUM OF SQUARES     MEAN SQUARES        F RATIO    F PROB.

        BETWEEN GROUPS                  5          22.0434            4.4087           3.893     0.0016

        WITHIN GROUPS                2248        2545.8890            1.1325

        TOTAL                        2253        2567.9324



                                            STANDARD       STANDARD
GROUP        COUNT          MEAN         DEVIATION         ERROR          MINIMUM        MAXIMUM        95 PCT CONF INT FOR MEAN

TYPE1         207         0.7633          0.9985          0.0694          0.0            5.0000         0.6265   TO         0.9001
TYPE2         466         0.7146          1.0255          0.0475          0.0            5.0000         0.6212   TO         0.8079
TYPE3         466         0.7554          1.0877          0.0495          0.0            5.0000         0.6642   TO         0.8526
TYPE4         358         0.7458          1.0208          0.0539          0.0            5.0000         0.6397   TO         0.8519
TYPE5         270         1.0481          1.1850          0.0722          0.0            5.0000         0.9060   TO         1.1902
TYPE6         487         0.7685          1.0841          0.0491          0.0            5.0000         0.6920   TO         0.8850

TOTAL        2254         0.7884          1.0678          0.0225          0.0            5.0000         0.7442   TO         0.8325

            FIXED EFFECTS MODEL           1.0642          0.0224                                        0.7444   TO         0.8323

           RANDOM EFFECTS MODEL                           0.0458                                        0.6706   TO         0.9062

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE         0.0089

TESTS FOR HOMOGENEITY OF VARIANCES

      COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2085, P = 0.002 (APPROX.)
      BARTLETT-BOX F =                             2.240, P = 0.048
      MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.411
```

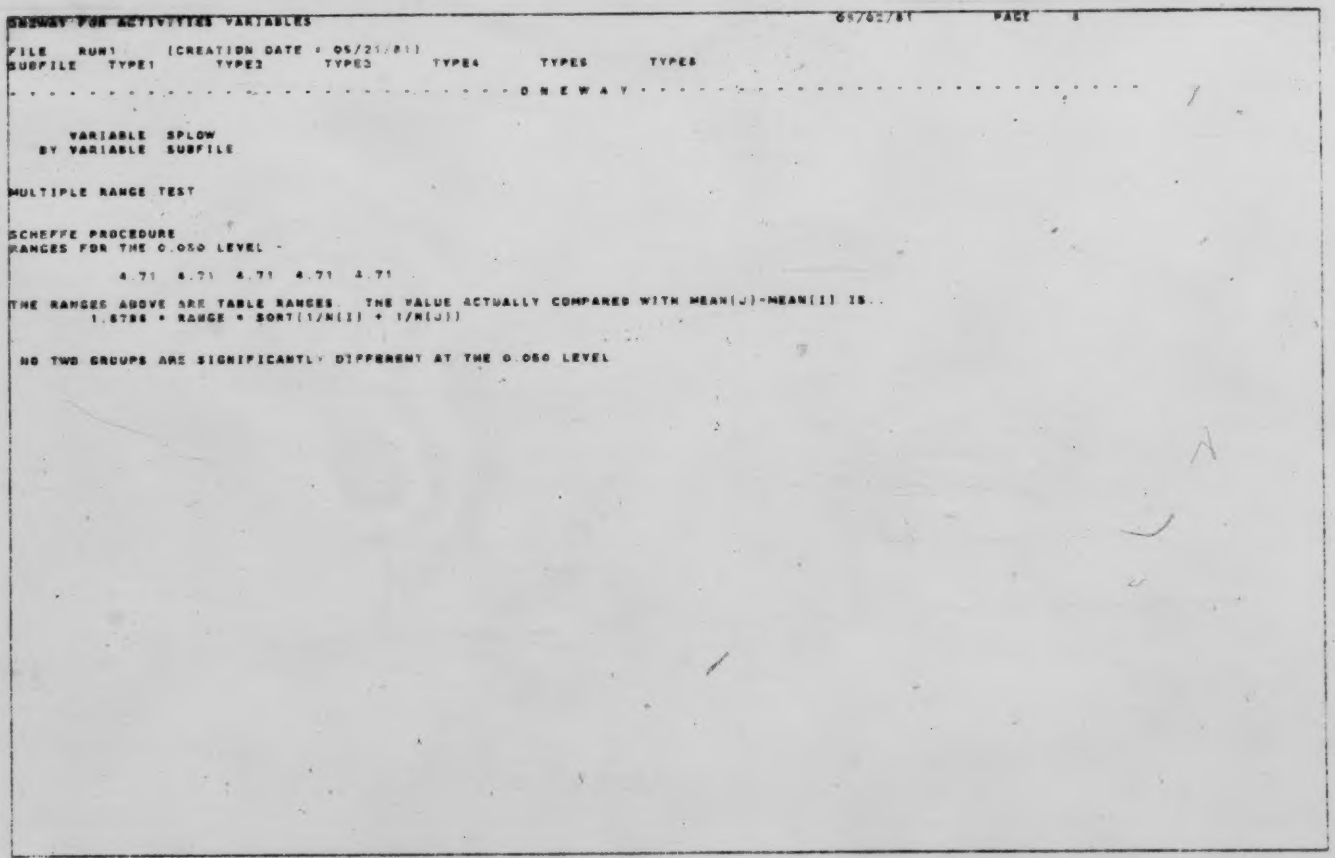
```
ONEWAY FOR ACTIVITIES VARIABLES                                                          06/02/81        PAGE    6

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - -


      VARIABLE  ORMED
   BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       0.7525 * RANGE * SQRT(1/N(I) + 1/N(J))

 (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

                               T T T T T T
                               Y Y Y Y Y Y
                               P P P P P P
                               E E E E E E
                               2 4 3 1 6 5

     MEAN       GROUP

     .7146      TYPE2
     .7458      TYPE4
     .7554      TYPE3
     .7633      TYPE1
     .7685      TYPE6
    1.0481      TYPE5      * * *
```

SPORTS/ATHLETICS: "1-10" TIMES PER YEAR

University of



```
ONEWAY FOR ACTIVITIES VARIABLES                                                   05/02/81        PAGE    7

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE  TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - -

     VARIABLE  SPLOW
  BY VARIABLE  SUBFILE

                                         ANALYSIS OF VARIANCE

            SOURCE              D.F.    SUM OF SQUARES    MEAN SQUARES        F RATIO   F PROB.

       BETWEEN GROUPS             5          82.7434          16.5487          2.933    0.0121

       WITHIN GROUPS           2248       12682.8283           5.6419

       TOTAL                   2253       12765.6840



                                    STANDARD     STANDARD
GROUP       COUNT        MEAN      DEVIATION       ERROR        MINIMUM       MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1         207      1.8647       2.2857       0.1589         0.0          13.0000          1.5515  TO       2.1779
TYPE2         466      1.7983       2.3632       0.1095         0.0          14.0000          1.5832  TO       2.0134
TYPE3         466      1.9163       2.3852       0.1105         0.0          14.0000          1.6991  TO       2.1335
TYPE4         358      2.2654       2.4744       0.1308         0.0          13.0000          2.0082  TO       2.5225
TYPE5         270      2.1667       2.3704       0.1443         0.0          12.0000          1.8826  TO       2.4507
TYPE6         487      2.2402       2.3415       0.1061         0.0          10.0000          2.0318  TO       2.4487

TOTAL        2254      2.0426       2.3804       0.0501         0.0          14.0000          1.9443  TO       2.1409

          FIXED EFFECTS MODEL       2.3753       0.0500                                     1.9445  TO       2.1407

         RANDOM EFFECTS MODEL                    0.0884                                     1.8153  TO       2.2699

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE         0.0285

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.1816, P = 0.556 (APPROX.)
     BARTLETT-BOX F =                              0.413, P = 0.840
     MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.172
```



```
ONEWAY FOR ACTIVITIES VARIABLES                                                   05/02/81        PAGE    8

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE  TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - -

     VARIABLE  SPLOW
  BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       1.6796 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

SPORTS/ATHLETICS: "11-20" TIMES PER YEAR

```
ONEWAY FOR ACTIVITIES VARIABLES                                                          06/02/81        PAGE   9

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -


     VARIABLE  SPMED
  BY VARIABLE  SUBFILE

                                               ANALYSIS OF VARIANCE

             SOURCE                    D.F.     SUM OF SQUARES      MEAN SQUARES        F RATIO    F.PROB.

     BETWEEN GROUPS                      5            39.1906            7.8381          5.041     0.0001

     WITHIN GROUPS                    2248          3495.3387            1.5549

     TOTAL                            2253          3534.5303



                                         STANDARD       STANDARD
GROUP        COUNT          MEAN        DEVIATION        ERROR          MINIMUM        MAXIMUM        95 PCT CONF INT FOR MEAN

TYPE1          207        0.6618          1.0295        0.0716            0.0          6.0000        0.5204  TO        0.8029
TYPE2          466        0.5751          1.1205        0.0519            0.0          6.0000        0.4731  TO        0.6771
TYPE3          466        0.7876          1.3132        0.0608            0.0          7.0000        0.6680  TO        0.9071
TYPE4          358        0.7542          1.1672        0.0617            0.0          8.0000        0.6329  TO        0.8755
TYPE5          270        1.0333          1.5672        0.0954            0.0         14.0000        0.8455  TO        1.2211
TYPE6          487        0.7988          1.2376        0.0561            0.0          8.0000        0.6886  TO        0.9089

TOTAL         2254        0.7587          1.2525        0.0264            0.0         14.0000        0.7068  TO        0.8104

         FIXED EFFECTS MODEL              1.2469        0.0263                                       0.7071  TO        0.8102

        RANDOM EFFECTS MODEL                            0.0613                                       0.6012  TO        0.9161

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE            0.0170

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2616, P = 0.000 (APPROX.)
     BARTLETT-BOX F =                            12.354, P = 0.000
     MAXIMUM VARIANCE / MINIMUM VARIANCE =        2.317
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                          06/02/81        PAGE  10

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -


     VARIABLE  SPMED
  BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
      0.8817 * RANGE * SQRT(1/N(I) + 1/N(J))

  (*) DENOTES PAIRS OF GROUPS SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL

                              T T T T T T
                              Y Y Y Y Y Y
                              P P P P P P
                              E E E E E E
                              2 1 4 3 6 5

     MEAN       GROUP

     .5751      TYPE2
     .6618      TYPE1
     .7542      TYPE4
     .7876      TYPE3
     .7988      TYPE6
    1.0333      TYPE5     *     *
```

NON-SIGNIFICANT ANALYSIS OF VARIANCE TABLES

Arts and Cultural: # of Activities

```
ONEWAY FOR ACTIVITIES VARIABLES                                                 05/26/81         PAGE    9

FILE   RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  ARACT
    BY VARIABLE  SUBFILE

                                                     ANALYSIS OF VARIANCE

                 SOURCE               D.F.     SUM OF SQUARES      MEAN SQUARES        F RATIO     F PROB.

         BETWEEN GROUPS                  5            26.3180            5.2636          1.469     0.1969

         WITHIN GROUPS                2248          8056.8967            3.5840

         TOTAL                        2253          8083.2148



                                               STANDARD        STANDARD
GROUP         COUNT            MEAN           DEVIATION          ERROR          MINIMUM        MAXIMUM        95 PCT CONF INT FOR MEAN

TYPE1           207          1.5942            2.0023           0.1392           0.0           10.0000        1.3198  TO       1.8686
TYPE2           466          1.3541            1.7986           0.0833           0.0           10.0000        1.1903  TO       1.5178
TYPE3           466          1.5322            1.9395           0.0899           0.0           12.0000        1.3555  TO       1.7088
TYPE4           358          1.5223            1.8405           0.0973           0.0            8.0000        1.3310  TO       1.7136
TYPE5           270          1.7259            1.9904           0.1211           0.0           13.0000        1.4874  TO       1.9644
TYPE6           487          1.5667            1.8711           0.0848           0.0           10.0000        1.4001  TO       1.7333

TOTAL          2254          1.5302            1.8941           0.0399           0.0           13.0000        1.4519  TO       1.6084

          FIXED EFFECTS MODEL                  1.8932           0.0399                                        1.4520  TO       1.6084

         RANDOM EFFECTS MODEL                                   0.0481                                        1.4040  TO       1.6563

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE            0.0045

TESTS FOR HOMOGENEITY OF VARIANCES

      COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.1834, P = 0.411 (APPROX.)
      BARTLETT-BOX F =                             1.269, P = 0.275
      MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.239
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                 05/26/81         PAGE   11

FILE   RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  ARACT
    BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       1.3387 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

of Alberta

```
ONEWAY FOR ACTIVITIES VARIABLES                                                   06/08/81         PAGE    3

FILE   RUN1     (CREATION DATE = 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -

      VARIABLE  ORMED2
   BY VARIABLE  SUBFILE          Outdoor Recreation: '21-30' Frequency Interval
                                               ANALYSIS OF VARIANCE

                 SOURCE              D.F.     SUM OF SQUARES     MEAN SQUARES          F RATIO    F PROB.

           BETWEEN GROUPS              5            1.6116            0.3223           0.834      0.5252

           WITHIN GROUPS            2248          868.5071            0.3863

           TOTAL                    2253          870.1187



                                           STANDARD       STANDARD
GROUP         COUNT          MEAN         DEVIATION        ERROR          MINIMUM        MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1           207         0.2222         0.5108         0.0355          0.0            2.0000          0.1522   TO          0.2922
TYPE2           466         0.3004         0.5974         0.0277          0.0            3.0000          0.2461   TO          0.3548
TYPE3           486         0.3004         0.6783         0.0314          0.0            6.0000          0.2387   TO          0.3622
TYPE4           358         0.2654         0.5588         0.0295          0.0            3.0000          0.2072   TO          0.3235
TYPE5           270         0.3259         0.6078         0.0370          0.0            3.0000          0.2531   TO          0.3987
TYPE6           467         0.2875         0.6635         0.0307          0.0            5.0000          0.2271   TO          0.3479

TOTAL          2254         0.2879         0.6215         0.0131          0.0            6.0000          0.2623   TO          0.3136

              FIXED EFFECTS MODEL          0.6215         0.0131                                         0.2623   TO          0.3136

             RANDOM EFFECTS MODEL                         0.0131                                         0.2543   TO          0.3215

WARNING - BETWEEN COMPONENT VARIANCE IS NEGATIVE
          IT WAS REPLACED BY 0.0 IN COMPUTING ABOVE RANDOM EFFECTS MEASURES


RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE          -0.0002


TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2073, P = 0.002 (APPROX.)
     BARTLETT-BOX F =                             7.693, P = 0.000
     MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.764
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                   06/08/81         PAGE    4

FILE   RUN1     (CREATION DATE = 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -


      VARIABLE  ORMED2
   BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS
        0.4395 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

University of A

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/08/81        PAGE    5
FILE    RUN1      (CREATION DATE : 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -

        VARIABLE  ORHIGH
     BY VARIABLE  SUBFILE          Outdoor Recreation: 'over 30' Frequency Interval
                                              ANALYSIS OF VARIANCE

              SOURCE              D.F.    SUM OF SQUARES     MEAN SQUARES        F RATIO    F PROB

      BETWEEN GROUPS                 5          3.6967           0.7393           0.928    0.4618

      WITHIN GROUPS               2248       1791.5257           0.7969

      TOTAL                       2253       1795.2222


                                      STANDARD        STANDARD
GROUP         COUNT        MEAN      DEVIATION         ERROR          MINIMUM         MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1          207        0.4831       0.8524         0.0592           0.0            4.0000          0.3663   TO        0.5999
TYPE2          466        0.3863       0.8430         0.0391           0.0            8.0000          0.3095   TO        0.4630
TYPE3          468        0.4678       0.8895         0.0412           0.0            8.0000          0.3868   TO        0.5488
TYPE4          358        0.4330       1.0261         0.0542           0.0           14.0000          0.3263   TO        0.5396
TYPE5          270        0.5074       0.8782         0.0534           0.0            4.0000          0.4022   TO        0.6126
TYPE6          487        0.4127       0.8607         0.0390           0.0            5.0000          0.3361   TO        0.4894

TOTAL         2254        0.4397       0.8926         0.0188           0.0           14.0000          0.4028   TO        0.4765

          FIXED EFFECTS MODEL          0.8927         0.0188                                          0.4028   TO        0.4765

         RANDOM EFFECTS MODEL                         0.0188                                          0.3913   TO        0.4880

WARNING - BETWEEN COMPONENT VARIANCE IS NEGATIVE
          IT WAS REPLACED BY 0.0 IN COMPUTING ABOVE RANDOM EFFECTS MEASURES

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE         -0.0002

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2196, P = 0.000 (APPROX.)
     BARTLETT-BOX F =                             4.082, P = 0.001
     MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.482
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/08/81        PAGE    6
FILE    RUN1      (CREATION DATE : 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - - -

        VARIABLE  ORHIGH
     BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
        0.6312 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/08/81        PAGE    7

FILE    RUN1      (CREATION DATE = 06/21/81)
SUBFILE    TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -

       VARIABLE  SPMED2
    BY VARIABLE  SUBFILE
```

Sports/Athletics: '21-30' Frequency Interval

```
                                              ANALYSIS OF VARIANCE

              SOURCE                 D.F.     SUM OF SQUARES     MEAN SQUARES        F RATIO     F PROB.

       BETWEEN GROUPS                  5            4.1243           0.8249            1.426      0.2118

       WITHIN GROUPS                2248         1300.2008           0.5784

       TOTAL                        2253         1304.3250



                                          STANDARD       STANDARD
GROUP        COUNT          MEAN        DEVIATION        ERROR           MINIMUM        MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1          207        0.3237          0.7546        0.0525          0.0           5.0000          0.2203   TO          0.4271
TYPE2          466        0.3090          0.7499        0.0347          0.0           5.0000          0.2407   TO          0.3773
TYPE3          466        0.3305          0.7280        0.0336          0.0           4.0000          0.2644   TO          0.3966
TYPE4          358        0.3883          0.7575        0.0401          0.0           4.0000          0.3085   TO          0.4670
TYPE5          270        0.4407          0.8193        0.0499          0.0           4.0000          0.3425   TO          0.5389
TYPE6          487        0.3799          0.7734        0.0350          0.0           5.0000          0.3110   TO          0.4487

TOTAL         2254        0.3585          0.7609        0.0160          0.0           5.0000          0.3270   TO          0.3899

           FIXED EFFECTS MODEL            0.7605        0.0160                                        0.3271   TO          0.3899

          RANDOM EFFECTS MODEL                          0.0194                                        0.3086   TO          0.4084

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE          0.0007

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.1915, P = 0.087 (APPROX.)
     BARTLETT-BOX F =                               1.112, P = 0.352
     MAXIMUM VARIANCE / MINIMUM VARIANCE =          1.273
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/08/81        PAGE    8

FILE    RUN1      (CREATION DATE = 06/21/81)
SUBFILE    TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6
- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -

       VARIABLE  SPMED2
    BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

           4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
        0.5378 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                        06/08/81      PAGE   9

FILE   RUN1     (CREATION DATE = 05/21/81)
SUBFILE   TYPE1      TYPE2      TYPE3      TYPE4      TYPE5      TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  SPHIGH
    BY VARIABLE  SUBFILE      Sports/Athletics: 'over 30' Frquency Interval

                                             ANALYSIS OF VARIANCE

              SOURCE              D.F.    SUM OF SQUARES    MEAN SQUARES      F RATIO    F PROB

       BETWEEN GROUPS               5          15.3314          3.0663        2.245    0.0475

       WITHIN GROUPS             2248        3070.8348          1.3660

       TOTAL                     2253        3086.1662



                                             STANDARD        STANDARD
GROUP          COUNT         MEAN       DEVIATION          ERROR         MINIMUM      MAXIMUM       95 PCT CONF INT FOR MEAN

TYPE1            207       0.7005          1.3464         0.0936           0.0       10.0000       0.5160  TO        0.8850
TYPE2            466       0.5515          1.0708         0.0496           0.0        7.0000       0.4540  TO        0.6490
TYPE3            466       0.6180          1.1841         0.0549           0.0        8.0000       0.5102  TO        0.7258
TYPE4            358       0.6648          1.0818         0.0572           0.0        8.0000       0.5524  TO        0.7772
TYPE5            270       0.8259          1.2053         0.0734           0.0        7.0000       0.6815  TO        0.9703
TYPE6            487       0.5914          1.2033         0.0545           0.0       10.0000       0.4842  TO        0.6985

TOTAL           2254       0.6384          1.1704         0.0247           0.0       10.0000       0.5901  TO        0.6868

          FIXED EFFECTS MODEL              1.1688         0.0246                                    0.5901  TO        0.6867

         RANDOM EFFECTS MODEL                             0.0379                                    0.5410  TO        0.7358

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE         0.0046

TESTS FOR HOMOGENEITY OF VARIANCES

      COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2150, P = 0.000 (APPROX.)
      BARTLETT-BOX F =                             4.272, P = 0.001
      MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.581
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                        06/08/81      PAGE  10

FILE   RUN1     (CREATION DATE = 05/21/81)
SUBFILE   TYPE1      TYPE2      TYPE3      TYPE4      TYPE5      TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  SPHIGH
    BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       0.8264 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

University of Al

```
ONEWAY FOR ACTIVITIES VARIABLES                                                  06/08/81        PAGE   11

FILE   RUN1     (CREATION DATE = 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  ARLOW
    BY VARIABLE  SUBFILE     Arts and Cultural: '1-10' Frequency Interval
                                                 ANALYSIS OF VARIANCE

                 SOURCE              D.F.     SUM OF SQUARES     MEAN SQUARES          F RATIO    F PROB.

      BETWEEN GROUPS                   5            1.3926           0.2785           0.274    0.9277

      WITHIN GROUPS                 2248         2287.3738           1.0175

      TOTAL                         2253         2288.7664



                                           STANDARD       STANDARD
GROUP        COUNT          MEAN          DEVIATION         ERROR          MINIMUM         MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1          207        0.5990            1.1818        0.0821          0.0             8.0000          0.4371   TO        0.7610
TYPE2          466        0.5300            0.9860        0.0457          0.0             5.0000          0.4403   TO        0.6198
TYPE3          466        0.5064            0.9777        0.0453          0.0             7.0000          0.4174   TO        0.5954
TYPE4          358        0.5251            0.9720        0.0514          0.0             8.0000          0.4241   TO        0.6262
TYPE5          270        0.5556            1.0850        0.0660          0.0            10.0000          0.4256   TO        0.6856
TYPE6          487        0.5318            0.9614        0.0436          0.0             5.0000          0.4462   TO        0.6174

TOTAL         2254        0.5342            1.0078        0.0212          0.0            10.0000          0.4926   TO        0.5758

           FIXED EFFECTS MODEL              1.0087        0.0212                                          0.4926   TO        0.5758

          RANDOM EFFECTS MODEL                            0.0212                                          0.4795   TO        0.5888

WARNING - BETWEEN COMPONENT VARIANCE IS NEGATIVE
          IT WAS REPLACED BY 0.0 IN COMPUTING ABOVE RANDOM EFFECTS MEASURES


RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE         -0.0020 *

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2192, P = 0.000 (APPROX.)
     BARTLETT-BOX F =                              3.799, P = 0.002
     MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.511
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                  06/08/81        PAGE   12

FILE   RUN1     (CREATION DATE = 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


       VARIABLE  ARLOW
    BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
        0.7133 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

University of Al

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/08/81        PAGE   13

FILE     RUN1      (CREATION DATE = 05/21/81)
SUBFILE    TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


         VARIABLE  ARMED
      BY VARIABLE  SUBFILE       Arts and Cultural: '11-20' Frequency Interval

                                              ANALYSIS OF VARIANCE

               SOURCE              D.F.    SUM OF SQUARES    MEAN SQUARES       F RATIO     F PROB

        BETWEEN GROUPS                5            4.0433          0.8087         1.571      0.1650

        WITHIN GROUPS              2248         1157.2522          0.5148

        TOTAL                      2253         1161.2954



                                      STANDARD       STANDARD
GROUP        COUNT          MEAN     DEVIATION         ERROR       MINIMUM       MAXIMUM        95 PCT CONF INT FOR MEAN

TYPE1          207        0.2850        0.6543        0.0455         0.0        3.0000        0.1954   TO          0.3747
TYPE2          466        0.2554        0.5877        0.0272         0.0        4.0000        0.2019   TO          0.3089
TYPE3          466        0.3562        0.7547        0.0350         0.0        6.0000        0.2875   TO          0.4249
TYPE4          358        0.3296        0.7043        0.0372         0.0        8.0000        0.2564   TO          0.4028
TYPE5          270        0.3519        0.7047        0.0429         0.0        6.0000        0.2674   TO          0.4363
TYPE6          487        0.3655        0.8277        0.0375         0.0       10.0000        0.2918   TO          0.4392

TOTAL         2254        0.3261        0.7179        0.0151         0.0       10.0000        0.2965   TO          0.3557

          FIXED EFFECTS MODEL           0.7175        0.0151                                   0.2965   TO          0.3557

        RANDOM EFFECTS MODEL                          0.0193                                   0.2765   TO          0.3756

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE          0.0008

TESTS FOR HOMOGENEITY OF VARIANCES

      COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2268, P = 0.000 (APPROX.)
      BARTLETT-BOX F =                           12.106, P = 0.000
      MAXIMUM VARIANCE / MINIMUM VARIANCE =       1.983
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                      06/08/81        PAGE   14

FILE     RUN1      (CREATION DATE = 05/21/81)
SUBFILE    TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -


        VARIABLE  ARMED
     BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST


SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
        0.5073 * RANGE * SQRT(1/N(I) + 1/N(J))

NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                  06/08/81        PAGE   15

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6
- - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - -

       VARIABLE  ARMED2
    BY VARIABLE  SUBFILE     Arts and Cultural: '21-30' Frequency Interval
                                                ANALYSIS OF VARIANCE

                 SOURCE               D.F.     SUM OF SQUARES     MEAN SQUARES        F RATIO    F PROB.

         BETWEEN GROUPS                  5             1.0326           0.2065          0.845    0.5176

         WITHIN GROUPS                2248           549.2575           0.2443

         TOTAL                        2253           550.2899


                                        STANDARD       STANDARD
GROUP         COUNT        MEAN        DEVIATION        ERROR         MINIMUM        MAXIMUM          95 PCT CONF INT FOR MEAN

TYPE1          207        0.1836        0.4876        0.0339          0.0          3.0000          0.1167   TO         0.2504
TYPE2          486        0.1502        0.4672        0.0216          0.0          4.0000          0.1077   TO         0.1927
TYPE3          446        0.2092        0.5585        0.0264          0.0          5.0000          0.1583   TO         0.2600
TYPE4          358        0.1786        0.4808        0.0254          0.0          3.0000          0.1286   TO         0.2286
TYPE5          270        0.1519        0.4268        0.0259          0.0          3.0000          0.1008   TO         0.2029
TYPE6          487        0.1889        0.4898        0.0222          0.0          4.0000          0.1453   TO         0.2325

TOTAL         2254        0.1783        0.4942        0.0104          0.0          5.0000          0.1579   TO         0.1988

            FIXED EFFECTS MODEL         0.4943        0.0104                                         0.1579   TO         0.1988

           RANDOM EFFECTS MODEL                       0.0104                                         0.1516   TO         0.2051

WARNING - BETWEEN COMPONENT VARIANCE IS NEGATIVE
        IT WAS REPLACED BY 0.0 IN COMPUTING ABOVE RANDOM EFFECTS MEASURES

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE          -0.0001

TESTS FOR HOMOGENEITY OF VARIANCES

      COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2283, P = 0.000 (APPROX.)
      BARTLETT-BOX F =                              6.979, P = 0.000
      MAXIMUM VARIANCE / MINIMUM VARIANCE =         1.759
```

```
ONEWAY FOR ACTIVITIES VARIABLES                                                  06/08/81        PAGE   16

FILE    RUN1      (CREATION DATE = 05/21/81)
SUBFILE   TYPE1       TYPE2       TYPE3       TYPE4       TYPE5       TYPE6
- - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - -

       VARIABLE  ARMED2
    BY VARIABLE  SUBFILE

MULTIPLE RANGE TEST

SCHEFFE PROCEDURE
RANGES FOR THE 0.050 LEVEL -

          4.71  4.71  4.71  4.71  4.71

THE RANGES ABOVE ARE TABLE RANGES.  THE VALUE ACTUALLY COMPARED WITH MEAN(J)-MEAN(I) IS..
       0.3495 * RANGE * SQRT(1/N(I) + 1/N(J))

 NO TWO GROUPS ARE SIGNIFICANTLY DIFFERENT AT THE 0.050 LEVEL
```

University of A

```
ONEWAY FOR ACTIVITIES VARIABLES                                                    05/02/81        PAGE   11

FILE    RUN1       (CREATION DATE = 05/21/81)
SUBFILE   TYPE1        TYPE2        TYPE3        TYPE4        TYPE5        TYPE6

- - - - - - - - - - - - - - - - - - - - - - - - - O N E W A Y - - - - - - - - - - - - - - - - - - - - - - - - -

    VARIABLE   ARNIGH
 BY VARIABLE   SUBFILE        Arts and Cultural: 'over 30' Frequency Interval
                                          ANALYSIS OF VARIANCE

                SOURCE                D.F.     SUM OF SQUARES     MEAN SQUARES        F RATIO    F PROB.

         BETWEEN GROUPS                  5             6.2902           1.2580          1.869    0.0986

         WITHIN GROUPS                2248          1513.1899           0.6731

         TOTAL                        2253          1519.4800



                                      STANDARD       STANDARD
GROUP        COUNT          MEAN     DEVIATION         ERROR        MINIMUM       MAXIMUM        95 PCT CONF INT FOR MEAN

TYPE1          207        0.4251        0.8550        0.0594        0.0          4.0000        0.3080  TO        0.5423
TYPE2          466        0.3584        0.7940        0.0368        0.0          5.0000        0.2861  TO        0.4308
TYPE3          488        0.3927        0.7656        0.0366        0.0          5.0000        0.3212  TO        0.4642
TYPE4          356        0.4385        0.8133        0.0430        0.0          5.0000        0.3540  TO        0.5231
TYPE5          270        0.5407        0.9583        0.0583        0.0          5.0000        0.4258  TO        0.6556
TYPE6          467        0.4025        0.7845        0.0355        0.0          5.0000        0.3326  TO        0.4723

TOTAL         2254        0.4157        0.8212        0.0173        0.0          5.0000        0.3816  TO        0.4498

          FIXED EFFECTS MODEL         0.8204        0.0173                                     0.3818  TO        0.4495

         RANDOM EFFECTS MODEL                       0.0242                                     0.3536  TO        0.4778

RANDOM EFFECTS MODEL - ESTIMATE OF BETWEEN COMPONENT VARIANCE          0.0016

TESTS FOR HOMOGENEITY OF VARIANCES

     COCHRANS C = MAX. VARIANCE/SUM(VARIANCES) = 0.2200, P = 0.000 (APPROX.)
     BARTLETT-BOX F =                             3.948, P = 0.001
     MAXIMUM VARIANCE / MINIMUM VARIANCE =        1.482
```

University of Al